

Minutes of Evidence
taken before the Committee
to inquire and report upon
the Subject of Agricultural
Education in England and
Wales. 1908



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DEPARTMENTAL COMMITTEE ON AGRICULTURAL EDUCATION
IN ENGLAND AND WALES.

MINUTES OF EVIDENCE

TAKEN BEFORE THE

DEPARTMENTAL COMMITTEE

APPOINTED BY THE

BOARD OF AGRICULTURE AND FISHERIES

TO INQUIRE INTO AND REPORT UPON THE SUBJECT OF

AGRICULTURAL EDUCATION

IN

ENGLAND AND WALES,

AND

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Presented to both Houses of Parliament by Command of His Majesty.



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DEPARTMENTAL COMMITTEE ON AGRICULTURAL EDUCATION.

TABLE OF CONTENTS.

	PAGE
LIST OF WITNESSES in the order in which they appeared before the Committee -	iv.
LIST OF PERSONS from whom Written Statements were received - - - - -	xi.
ANALYSIS OF WITNESSES - - - - -	xii.
MINUTES OF EVIDENCE - - - - -	1
LETTER RECEIVED FROM THE HONORARY SECRETARY OF THE AGRICULTURAL EDUCATION ASSOCIATION - - - - -	606
LIST OF THE PRINCIPAL HEADINGS under which the Evidence is classified in the Index - - - - -	607
GENERAL INDEX OF THE MINUTES OF EVIDENCE - - - - -	609

DEPARTMENTAL COMMITTEE ON AGRICULTURAL EDUCATION.

LIST OF WITNESSES

in the order in which they appeared before the Committee.

(NOTE.—*The names of the Witnesses in alphabetical order and more complete information as to their qualifications will be found in the General Index, p. 609.*)

Date.	Name of Witness.	Profession, Occupation, or Description.	* Representing or Nominated by.	Number of first Question.	Page
1907. 1st Day . April 30th	Mr. T. B. WOOD, M.A.	Reader in Agricultural Chemistry and Secretary of the Department of Agriculture of the University of Cambridge (<i>now</i> Drapers Professor of Agriculture).	Cambridge University.	1	1
	Mr. B. B. SAPWELL .	Member of the Norfolk County Council and of the Norfolk Chamber of Agriculture.	" " "	239	10
2nd Day . May 1st	Mr. THOS. CARRICK .	Alderman of the Northumberland County Council and Member of the Council and Agricultural Committee of the Armstrong College, Newcastle-upon-Tyne.	Armstrong College, Newcastle-upon-Tyne.	315	14
	Professor D. A. GILCHRIST, M.Sc., F.R.S.E.	Professor of Agriculture and Rural Economy, Armstrong College, Newcastle-upon-Tyne.	" " "	517	19
	Mr. M. J. R. DUNSTAN, M.A., F.R.S.E., F.I.C.	Principal of the South-Eastern Agricultural College, Wye.	South-Eastern Agricultural College, Wye.	751	28
	Mr. A. AMOS . . .	Governor of the South-Eastern Agricultural College, Wye.	" " "	882	32
3rd Day . May 2nd.	Mr. J. H. NICHOLAS, M.A.	Secretary of the Education Committee of the Essex County Council.	Essex Education Committee	951	35
	Mr. T. GOODCHILD .	Chairman of the Agricultural Sub-Committee of the Essex Education Committee.	" " "	1,067	40
	Mr. G. RABY . . .	Member of the Agricultural Sub-Committee of the Essex Education Committee.	" " "	1,096	42
	Mr. A. STEEL . . .	" " " "	" " "	1,160	44
	Mr. J. H. Nicholas (re-called).	" " " "	" " "	1,188	45

* At the commencement of the Committee's enquiry the majority of the institutions were asked to suggest the names of two witnesses: "(i.) An official or member of the staff; and (ii.) some person, preferably a landowner or farmer, who has interested himself in the work of the Institution, and is thoroughly conversant with the practical results amongst the farmers of the district of the work which has been conducted through its agency."

Date.	Name of Witness.	Profession, Occupation, or Description.	Representing or Nominated by.	Number of first Question.	Page.
1907. 3rd Day— <i>contd.</i>	Mr. T. J. YOUNG, F.S.I.	Principal of the College of Agriculture and Horticulture, Holmes Chapel, Cheshire.	College of Agriculture and Horticulture, Holmes Chapel, Cheshire.	1,240	46
	Mr. G. W. HILL	Farmer in Cheshire	" " "	1,447	51
4th Day May 7th	Mr. A. D. HALL, M.A.	Director of the Rothamsted Experimental Station, Harpenden, and formerly Principal of the South-Eastern Agricultural College, Wye.	" " "	1,479	53
	Mr. T. COPE	Chairman of the Leicestershire Education Committee and of the Governing Body of the Midland Agricultural and Dairy College.	Midland Agricultural and Dairy College, Kingston, Derby.	1,640	60
	Mr. J. F. BLACKSHAW, F.C.S., A.S.I.	Principal of the Midland Agricultural and Dairy College, Kingston, Derby.	" " "	1,662	62
5th Day May 8th.	Mr. M. J. R. Dunstan (re-called).	" " "	" " "	1,834	69
	Mr. WM. MANNINGTON	Chairman of the Agricultural Sub-Committee of the East Sussex County Council.	East Sussex County Council.	1,972	73
	Mr. S. A. WOODHEAD, B.Sc., F.I.C., F.C.S.	Principal of the Agricultural and Horticultural College, Uckfield.	Agricultural and Horticultural College, Uckfield.	2,154	78
	Mr. W. ASHCROFT	Chairman of the Joint Committee of the British Dairy Institute, Reading.	British Dairy Institute, Reading	2,336	82
	Mr. MILES BENSON	Manager and Chief Instructor of the British Dairy Institute, Reading.	" " "	2,491	88
6th Day May 9th.	Sir C. THOMAS DYKE ACLAND, Bart.	Chairman of the Devon County Education Committee, and Member of the Council of the Bath and West and Southern Counties Society.	Bath and West and Southern Counties Society	2,617	93
	Mr. J. BICKERSTETH	Clerk to the County Council of the East Riding of Yorkshire and one of the Joint Clerks of the Yorkshire Council for Agricultural Education.	Yorkshire Council for Agricultural Education.	2,927	105
	Mr. R. FISHER	Member of the Education Committee of the County Council for the East Riding of Yorkshire.	Leeds University.	2,999	110
	Professor R. S. SETON, B.Sc.	Professor of Agriculture in the University of Leeds.	" " "	3,043	111
7th Day May 14th.	Mr. J. Bickersteth (re-called).	" " "	" " "	3,080	114
	Mr. ALFRED INSKIP	Chairman of the Agricultural Education Committee of the Bedfordshire County Council.	Agricultural Institute, Ridgmont.	3,301	122

Date.	Name of Witness.	Profession, Occupation, or Description.	Representing or Nominated by.	Number of first Question.	Page.
1907. 7th Day— <i>contd.</i>	Mr. EDRIC DRUCE, . F.C.S.	Principal of the Agricultural Institute, Ridgmont.	Agricultural Institute, Ridgmont.	3,494	128
8th Day . May 15th.	Mr. W. M. CHILDS, M.A.	Principal of the University College, Reading.	University College, Reading.	3,811	137
	Mr. F. H. WRIGHT .	Registrar of the University College, Reading.	" " "	3,923	142
	<i>Mr. W. M. Childs</i> (re-called).			3,929	143
	Mr. M. J. SUTTON .	Member of the College Council of the University College, Reading.	University College, Reading.	4,015	145
	Mr. J. PERCIVAL, M.A.	Director of the Agricultural Department of the University College, Reading.	" " "	4,107	149
	Mr. F. W. KEEBLE, M.A., D.Sc.	Director of the Horticultural Department of the University College, Reading.	" " "	4,237	154
9th Day . May 28th.	<i>Mr. J. Percival</i> (re-called).			4,265	157
	<i>Mr. F. W. Keeble</i> (re-called).			4,385	161
	Mr. RICHARD P. WARD	Director of Education to the Cheshire County Council.	Worleston Dairy Institute.	4,451	163
	Miss MAY CROOKE .	Principal of the School of Gardening, Bredons Norton, near Tewkesbury.		4,691	170
10th Day . May 29th.	Mr. J. MARSHALL DUGDALE.	Alderman of the Montgomery County Council.	Royal Agricultural Society of England.	4,868	177
	Mr. W. E. COLLINGE, M.Sc.	Head of the Department of Economic Zoology at the University of Birmingham.	Birmingham University.	5,034	183
11th Day . May 30th.	Mr. D. T. COWAN .	Director of Education for the Hants County Council.	Hampshire Farm School at Basing.	5,085	186
	Miss FAITHFULL .	Warden of the Studley Horticultural College, Warwickshire.	Studley Horticultural College, Warwickshire.	5,294	193
	Mr. T. H. WARREN, M.A.	Vice-Chancellor of the University of Oxford.	Oxford University	5,411	197
	Sir OLIVER LODGE, F.R.S., D.Sc., LL.D.	Principal of the University of Birmingham.	Birmingham University.	5,472	200
12th Day . June 4th	Colonel S. T. H. BURNE	Chairman of the Board of Governors of the Harper-Adams Agricultural College, Newport, Salop.	Harper-Adams Agricultural College, Newport, Salop.	5,542	204
	Mr. P. HEDWORTH FOULKES, B.Sc., F.E.S.	Principal of the Harper-Adams Agricultural College, Newport, Salop.	" " "	5,686	208
	Professor LLOYD MORGAN, LL.D., F.R.S.	Principal of the University College, Bristol.	University College, Bristol.	5,929	214

Date.	Name of Witness.	Profession, Occupation, or Description.	Representing or Nominated by.	Number of first Question.	Page.
1907. 13th Day . June 5th.	Mr. SAMUEL KIDNER .	Member of the Somerset County Council.		6,011	218
	Mr. EDWARD BROWN, F.L.S.	Assistant Director of the Agricultural Department and Lecturer in Poultry-keeping of the University College, Reading.		6,152	222
	Mr. H. R. MILL, D.Sc., LL.D.	President of the Royal Meteorological Society and Director of the British Rainfall Organisation.	Royal Meteorological Society.	6,292	230
	Mr. E. VINCENT V. WHEELER.	Vice-Chairman of the Worcestershire County Council.	Worcestershire County Council.	6,399	235
14th Day . June 6th.	Mr. P. P. PENNANT, M.A.	Member of the Council of the University College of North Wales, Bangor.	University College of North Wales, Bangor.	6,480	238
	Mr. THOMAS WINTER, M.A.	Professor of Agriculture at the University College of North Wales, Bangor.	" " "	6,650	243
	Mr. THOMAS HACKING	Principal of the Countess of Warwick's School, "Bigod's Hall," Dunmow.	Countess of Warwick's School, "Bigod's Hall," Dunmow.	6,907	255
15th Day . June 11th.	Mr. H. C. HOWARD .	Chairman of the Cumberland County Council.	Cumberland County Council.	6,997	260
	Mr. ROBERT TINNIS- WOOD.	Alderman of the Cumberland County Council.	" " "	7,112	264
	Mr. W. T. LAWRENCE	Manager of the Cumberland and Westmorland Farm School, Newton Rigg, near Penrith.	Cumberland and Westmorland Farm School, Newton Rigg.	7,217	268
	Mr. J. SMITH-HILL, B.A., B.Sc.	Principal of the Aspatria Agricultural College, Carlisle.	Aspatria Agricultural College.	7,442	276
16th Day . June 12th.	Mr. BRUCE SWANWICK	Member of the Agricultural Sub-Committee of the Gloucestershire Education Committee.	Gloucestershire Education Committee.	7,585	280
	Mr. DRYSDALE TURNER	Director of Agricultural Instruction to the Gloucestershire Education Committee.	" " "	7,772	287
	The Right Hon. Lord FITZMAURICE.	Chairman of the Wiltshire County Council.		7,840	289
	<i>Mr. Drysdale Turner</i> (re-called).			7,869	292
	Mr. H. W. HOUSEHOLD, M.A.	Secretary to the Gloucestershire Education Committee.	Gloucestershire Education Committee.	8,051	298
17th Day . June 13th.	Mr. T. F. ROBERTS, LL.D.	Principal of the University College of Wales, Aberystwyth.	University College of Wales, Aberystwyth.	* 8,102	301

Date.	Name of Witness.	Profession, Occupation, or Description.	Representing or Nominated by.	Number of first Question.	Page.
1907. 17th Day— <i>contd.</i>	Mr. H. JONES-DAVIES	Member of the College Council of the University College of Wales, Aberystwyth, and formerly Chairman of the Carmarthenshire County Council.	University College of Wales, Aberystwyth.	8,249	310
	Mr. B. T. P. BARKER, M.A.	Director of the National Fruit and Cider Institute, Long Ashton, near Bristol.	National Fruit and Cider Institute.	8,405	315
18th Day . June 18th.	Mr. W. ANKER-SIMMONS	Member of the Firm of Messrs. Simmons & Sons, Land Agents, etc., Henley - on - Thames, Basingstoke and Reading.	.	8,578	320
	Miss EDITH BRADLEY.	Formerly Warden of the Lady Warwick Hostel at Reading, and Studley Castle, Warwickshire	.	8,745	326
	Mr. ALFRED HOPKINSON, LL.D., K.C.	Vice-Chancellor of the Victoria University of Manchester.	Manchester University.	8,855	330
	Professor F. E. WEISS, D.Sc.	Professor of Botany in the Victoria University of Manchester.	„ „ „	8,937	334
	Mr. H. HAMEL SMITH.	Formerly resident in the West Indies.	.	8,960	335
19th Day . June 19th.	Mr. C. N. P. PHIPPS .	Chairman of the Agricultural Education Committee of the Wiltshire County Council.	Wiltshire Agricultural Education Committee.	8,980	337
	Mr. WM. MCCrackEN.	Formerly Professor of Agriculture at the Royal Agricultural College, Cirencester.	.	9,206	343
	Mr. C. H. EADY .	Farm Steward and Assistant Agent to Lady Wantage, at Lockinge.	.	9,354	348
	Professor T. W. CAVE, F.R.C.V.S.	Professor of Veterinary Science at the South-Eastern Agricultural College, Wye.	.	9,485	351
	Miss A. MILLER .	Formerly Student in the Horticultural Department of the University College, Reading.	.	9,585	355
• 20th Day . June 20th.	Sir JOHN McFADYEAN, M.B., B.Sc., F.R.S.E., M.R.C.V.S.	Principal of the Royal Veterinary College, London.	Royal Veterinary College.	9,674	357
	Mr. JAMES PETER .	Steward and Land Agent to Lord Fitzhardinge, at Berkeley Castle, Gloucestershire.	.	9,755	361
	The Rev. J. B. McCLELLAN, M.A.	Principal of the Royal Agricultural College, Cirencester.	Royal Agricultural College, Cirencester.	9,890	366
	Mr. W. P. WRIGHT .	Horticultural Superintendent under the Kent County Council and Superintendent of Horticulture at the South-Eastern Agricultural College, Wye.	Horticultural Education Association.	10,113	373

Date.	Name of Witness.	Profession, Occupation, or Description.	Representing or Nominated by.	Number of first Question.	Page.
1907 21st Day . June 25th	Mr. W. J. GRANT .	Director of Agricultural Education for the County of Monmouth.	Agricultural Sub-Committee of the Monmouth County Education Committee.	10,287	378
	The Hon. Sir JOHN A. COCKBURN, K.C.M.G.	Formerly Minister of Agriculture, South Australia.		10,522	387
	Mr. P. ALLTOFT. .	Instructor in the Manual Processes of Agriculture under the County Councils of Wiltshire and the Lindsey Division of Lincoln.		10,599	390
	Mr. CHARLES SHEATHER, F.R.C.V.S.	Master of the Worshipful Company of Farriers.	Farriers' Company	10,759	393
	Mr. GEORGE LANGRIDGE.	Formerly President of the Surveyors' Institution.	Surveyors' Institution.	10,893	398
22nd Day . June 26th.	Mr. W. GOARING . .	Lecturer in Horticulture under the County Council of East Sussex.	Horticultural Education Association	11,026	402
	Professor J. R. CAMPBELL, B.Sc.	Assistant Secretary in respect of Agriculture under the Department of Agriculture and Technical Instruction for Ireland.	Department of Agriculture and Technical Instruction for Ireland.	11,135	405
	Mr. F. O. SOLOMON .	Head Master of the Dauntsey Agricultural School, West Lavington, Wiltshire.	Dauntsey Agricultural School, West Lavington, Wiltshire.	11,415	417
	Miss WILKINSON .	Principal of the Horticultural College, Swanley.	Horticultural College, Swanley.	11,556	421
23rd Day June 27th.	Mrs. HOPKINSON .	Chairman of the Colonial Branch of the Horticultural College, Swanley.	" " "	11,677	425
	Mr. JAMES MACDONALD	Secretary to the Highland and Agricultural Society of Scotland.		11,758	427
	Mr. WM. H. DUNN .	Chairman of the Berkshire County Council.	Berkshire County Council.	11,915	432
	Mr. C. J. DREWITT .	Member of the County Council of West Sussex.	West Sussex County Council.	12,014	436
	Mr. J. W. SMITH .	Member of the Herefordshire County Council.	Herefordshire County Council.	12,174	441
24th Day . July 2nd.	Mr. J. O. PEET, B.Sc.	Organiser of Agricultural Education under the Herefordshire County Council.	" " "	12,308	445
	Mr. C. B. STIBY .	Alderman of the Dorset County Council.	Dorset County Council.	12,512	450
	Mr. CHRISTOPHER MIDDLETON.	Member of the Council of the Royal Agricultural Society of England.		12,782	457
	Mr. A. WHEATLEY, F.R.C.V.S.	Veterinary Surgeon, Reading .		12,909	461

Date.	Name of Witness.	Profession, Occupation, or Description.	Representing or Nominated by.	Number of first Question.	Page.
1907. 25th Day . July 3rd.	Mr. H. TRUSTRAM EVE	Secretary of the Farmers' Club	Farmers' Club .	12,951	462
	Major P. G. CRAIGIE, C.B.	Recently Assistant Secretary to the Board of Agriculture and Fisheries.		13,175	471
	Mr. WINDHAM E. HALE	Vice-Chairman of the Agricultural Sub-Committee of the Lancashire County Council.	Agricultural Sub-Committee of the Lancashire County Council.	13,260 ¹ ₂	476
	Mr. E. PORTER, B.Sc.	Secretary of Agriculture for the Lancashire County Council.	" " "	13,505	483
26th Day . July 4th.	Mr. W. FITZHERBERT BROCKHOLES.	Member of the Lancashire County Council and Chairman of the Lancashire Farmers' Association.	Lancashire Farmers' Association.	13,660	487
	Mr. A. E. HUMPHRIES	President of the National Association of British and Irish Millers.		13,828	493
	The Rev. W. WILKS, M.A.	Secretary of the Royal Horticultural Society.	Royal Horticultural Society.	13, 02	497
	Mr. J. A. VOELCKER, M.A., B.Sc., Ph.D.	Chemist to the Royal Agricultural Society of England and other societies.		13,975	499
	Mr. GEORGE HOGBEN, M.A.	Inspector-General of Schools in New Zealand.		14,040	503
27th Day . July 10th.	Mr. E. S. BEAVEN .	Maltster, of Warminster, Wilts, and a Member of the Agricultural Education Committee of the Wiltshire County Council.		14,129	507
	Mr. CHRISTOPHER TURNOR.	Member of the County Council for the Lindsey Division of Lincoln	County Councils Association.	14,221	511
	Mr. J. A. SMITH .	Principal of the Eastern Counties Dairy Institute.	Eastern Counties Dairy Institute.	14,486	522
28th Day . July 11th.	Mr. WALTER F. REID, F.C.S., F.I.C.	Member of the Council of the British Bee Keepers' Association.	British Bee Keepers' Association.	14,583	526
	Mr. T. W. COWAN .	Chairman of the British Bee Keepers' Association.	" " "	14,723	532
	The Rt. Hon. HENRY HOBHOUSE.	Chairman of the Education Committee of the Somerset County Council.	County Councils Association.	14,839	536
29th Day . July 16th.	Professor WM. SOMERVILLE, D.Sc.	Sibthorpian Professor of Rural Economy in the University of Oxford.	Oxford University.	15,042	544
	Mr. A. G. L. ROGERS	Head of the Intelligence Branch of the Board of Agriculture and Fisheries.	Board of Agriculture & Fisheries.	15,1 6	548
30th Day . July 17th.	Professor T.H. MIDDLETON, M.A., M.Sc.	Assistant Secretary to the Board of Agriculture and Fisheries; formerly Professor of Agriculture at the University of Cambridge.		15,437	560
	Mr. A. E. BROOKE-HUNT.	Superintending Inspector of the Board of Agriculture and Fisheries.	Board of Agriculture & Fisheries.	15,515	567

Date.	Name of Witness.	Profession, Occupation, or Description.	Representing or Nominated by.	Number of first Question.	Page.
1908. 31st Day . Feb. 19th.	Mr. F. G. OGILVIE, C.B.	Principal Assistant Secretary for Technology and Higher Education in Science and Art, Board of Education.	Board of Education.	15,690	576
	Mr. H. S. LAWRENCE .	Director of Agriculture, Bombay		16,134	601
	Mr. W. H. MORELAND, C.I.E.	Director of the Department of Land Records and Agriculture, United Provinces of Agra and Oudh.		16,273	604

LIST OF PERSONS FROM WHOM WRITTEN STATEMENTS, FOR THE MOST PART IN LIEU OF ORAL EVIDENCE, WERE RECEIVED.

Mr. GRAHAM BALFOUR	Director of Education, Staffordshire County Council, and nominated by the Association of Directors and Secretaries for Education to give evidence before the Committee.
Mr. CHARLES BATHURST	Nominated by the Agricultural Organisation Society to give evidence on their behalf.
Col. M. LOCKE BLAKE	Member of the Agricultural Instruction Committee, and Chairman of the Cheese School Sub-Committee of the Somerset County Council.
The Rev. Canon E. W. GOODDEN .	Chairman of the Dorset County Education Committee.
*HON. SECRETARY	Agricultural Education Association.
Col. LEGARD, C.B.	Chairman of the Education and Dairying Committee of the Yorkshire Union of Agricultural Clubs and Chambers of Agriculture, and nominated by the Union to give evidence on their behalf.
†Mr. P. J. MEAD	Acting Director of Agriculture and Co-operative Credit Societies, Bombay.
REGISTRAR AND SECRETARY . . .	Institute of Chemistry.
SECRETARY	Harris Institute, Preston.
SECRETARIES OF THE EDUCATION COMMITTEES.	Counties of Carmarthen, Isle of Wight, Pembroke and Westmorland.
The Rev. Canon S. STAFFURTH .	Co-opted Member of the County Education Committee of the Holland Division of Lincoln.
The Rev. C. J. STEWART	Chairman of the East Suffolk Education Committee.
Mr. E. G. WHEELER	Nominated by the Land Agents' Society to give evidence on their behalf.
Professor WRIGHTSON	Principal of the former College of Agriculture, Downton, Salisbury.

* See page 606.

† See pages 601-4.

ANALYSIS OF WITNESSES.

INSTITUTIONS.		NUMBER.
UNIVERSITIES AND UNIVERSITY COLLEGES.		
Heads of Universities or Principals of Colleges	.	6
Members of the teaching staff	.	10
Past member of the teaching staff	.	1
Included elsewhere.	.	(1)
Members of the administrative staff	.	1
AGRICULTURAL COLLEGES.		
Principals	.	6
Included elsewhere (under Institutions)	.	(1)
Other members of the teaching staff	.	3
Past member of the teaching staff (included elsewhere)	.	(1)
FARM INSTITUTES OR SCHOOLS.		
Principals	.	2
SPECIAL INSTITUTIONS		
Dairying	.	3
Included elsewhere (under Institutions)	.	(1)
Veterinary	.	1
Cider-making	.	1
AGRICULTURAL SCHOOLS.		
Principals	.	2
GOVERNING BODIES (excluding County Councils Committees).		
Members (<i>not</i> "ex-officio")	.	5
Included elsewhere	.	(4)
INSTITUTIONS FOR THE TRAINING OF WOMEN.		
Representatives	.	3
TOTAL NUMBER FROM INSTITUTIONS		<u>44 and (6)*</u>
COUNTY COUNCILS.		
Agricultural Organisers and Instructors (not attached to an Institution)	.	4
Instructors	.	1
Included elsewhere	.	(2)
Administrative Officials	.	5
Members and general representatives	.	7
Included elsewhere	.	(23)
TOTAL NUMBER FROM COUNTY COUNCILS		<u>17 & (25)</u>
AGRICULTURE.		
Landowners (included elsewhere)	.	(13)
Farmers	.	16
Land Agents	.	2
Included elsewhere	.	(3)
Land Stewards or Manager	.	2
Other industries closely connected with Agriculture	.	5
Included elsewhere	.	(3)
Horticulture, &c., for Women	.	3
TOTAL NUMBER FOR AGRICULTURE		<u>28 & (19)</u>

* The two witnesses under Special Institutions and Principals of Agricultural Colleges who are referred to as "included elsewhere (under Institutions)" are not included in this (6).

To facilitate reference from the Index to particular points contained in lengthy answers dealing with more than one subject, such answers have been sub-divided by means of marginal index letters—*e.g.* (*see* p. 40).

MINUTES OF EVIDENCE
TAKEN BEFORE THE
DEPARTMENTAL COMMITTEE
ON
AGRICULTURAL EDUCATION
IN
ENGLAND AND WALES
AT WINCHESTER HOUSE, ST. JAMES'S SQUARE, LONDON, S.W.

FIRST DAY.

Tuesday, 30th April, 1907.

PRESENT:

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. T. B. WOOD, M.A., Reader in Agricultural Chemistry and Secretary of the Department of Agriculture of the University of Cambridge, called and examined.

1. (*Chairman*) Will you please inform this Committee in brief what has been the history of the Agricultural Department in the University of Cambridge?—The history of the University Department of Agriculture is briefly somewhat as follows:—In 1891-2 there was an idea of starting such a department in connection with the University, but at that time matters were not ripe for it. It was not then started officially, but in 1892 an informal Committee or Association was formed which included four of the University Professors, namely, the Professors of Chemistry, Geology, Botany, and Physiology, as well as representatives of ten neighbouring County Councils. That Committee was known as the "Cambridge and County Agricultural Education Scheme." It made quite an informal start, and was supported by a Government grant and by contributions from County Councils. Under that Committee the work showed signs of development, and later on—in 1898-9—endowments were offered by the Drapers' Company and by Sir Walter Gilbey, on the condition that the University took the matter up by creating a Department of Agriculture and appointing a Professor of Agriculture. In May, 1893, an Agricultural Examination Syndicate was appointed by

the University. The first examination for the Diploma in Agriculture was held in June, 1894, and examinations have been held annually since that date. The Committee I have spoken of and this syndicate together carried on the work of teaching and examining until 1899, when, as I have stated, it was taken over by the establishment of a Department of Agriculture in the University. The Professor of Agriculture was appointed in 1899. Since that time a degree has been given in agriculture, and the staff of the Department has been increased by the addition of a Reader in Agricultural Chemistry and a number of lecturers. That is, briefly, the history of the Agricultural Department of the University of Cambridge.

2. What courses of study are now provided?—These are a little difficult to classify, because an examination often serves two purposes:—We have first of all a course for the degree of B.A. in Agricultural Science. This is not an honours degree, but the ordinary B.A. In order to obtain it the student usually spends one year or a year-and-a-half or perhaps even two years in passing the usual University preliminary examinations known as the "previous" and the "general,"

Mr.
T. B. Wood.
•
30 Apl., 1907.

Mr.
T. B. Wood.
30 Apl., 1907.

covering a knowledge of classics, mathematics, &c. After that the student spends his third year in studying sciences applied to agriculture, and gets his degree on what is called the special examination in agricultural science. This examination also counts as the first part of the examination for the Diploma in Agriculture. In addition to this we have a course for the Diploma in Agriculture. Students for the Diploma, as a rule, do not start agriculture until they have done the first part of the science tripos, which is a general examination in various branches of science, or until they have done the special examination in agricultural science, which admits them to the final examination for the diploma. They have thus some general scientific training before starting on the diploma course. Candidates for the Diploma examination take a year's course of more advanced lectures and practical work in agriculture and the applied sciences, and get their diploma on the results of an examination which includes practical work in science, and a *viva voce* examination on a farm. Quite a considerable proportion of the students stay a year after their diploma and do research work. One may say, therefore, we have two courses—one more or less of an elementary character for the degree, and one more advanced and technical for the diploma.

3. Then the diploma constitutes a higher qualification than the degree?—Certainly, considerably higher.

4. Is it a rule that those who obtain the diploma obtain the degree first?—Not necessarily. In order to obtain a degree the student must reside three years in the University, and must pass certain other examinations besides the special examination. For the diploma there are no qualifications of that kind, either of residence, or any other examination except those for the diploma itself. For instance, we sometimes get very good men sent up as scholars by County Councils who may not have the requisite means to join the University. They come and take lodgings in the town, and go through the course of study and obtain the diploma, but cannot obtain the degree, although, perhaps, they may have done more work than is necessary for it, because they have not passed the preliminary examination, and have not joined the University.

5. Are they not considered to be students of the University?—The University recognises them in a way. When a County Council subscribes to the University fund for the Department of Agriculture it has the privilege of nominating students to come up in that way. That is a concession on the part of the University. These young men are allowed to come up provided they come from a county whose Council belongs to our Federation.

6. The students you refer to are sent up by County Councils?—Yes.

7. What is the total or the average number of students for the degree and diploma?—The total number of students in residence at the present time is 51. Entries are not due for the coming examination until the 14th May, and it is therefore a little difficult to state exactly what the numbers will be. My class for the diploma numbers 20, and I imagine that all these will enter for the examination. I have 16 in my class for the degree examination.

8. Is the number of students for the degree and the diploma increasing gradually?—Yes, I can give some figures to illustrate that. The entries in 1893 were nine, in 1894 they were four, in 1895 eight, in 1896 six, in 1897 nine, in 1898 four, and in 1899 five, so that there was an average of about seven in the years previous to 1899 when the University formally created a Department of Agriculture. Since then the numbers have been as follows:—34 in 1899-00, 27 in 1900-01, 19 in 1901-02, 32 in 1902-03, 20 in 1903-04, 36 in 1904-05, 37 in 1905-06, and 37 in 1906-07. This year we have altogether 51.

9. Is that both for the diploma and the degree?—There are about 20 for the diploma, and 16 for the degree. That makes 36, and the remainder are students who have not yet specified what they intend to do. They are attending lectures but have not definitely joined either class.

10. Do the County Council students who enter for the diploma come well prepared? I mean have they had sufficient preliminary scientific training?—The scholarships are generally given on our recommendation. A County Council receives an application from a boy for

an agricultural scholarship, and that boy is sent up to us. Our staff examines him and reports whether he seems sufficiently educated to benefit by the course of study. We do not recommend a scholar unless he seems qualified in that respect.

11. At what institutions have they received their preliminary training?—Anywhere. I have to-morrow to examine a boy who comes from Wellingborough School, sent up by the Norfolk County Council. Provided I report that his education is good enough to enable him to benefit by the instruction he will receive, he will be admitted.

12. Can you give the Committee an idea of the standard you adopt for admittance?—As to indispensable knowledge, a candidate must first of all be a good arithmetician, and fairly good at elementary mathematics. He should also have sufficient general education to enable him to understand lectures and take notes. What we always do is to tell them to write an account of something or other—perhaps of the kind of agriculture in their own district—and one can judge, from the kind of way they tackle that, whether they are the sort of pupils who will be able, in attending lectures, to understand the points and make intelligent notes. We also set them some general questions, and we expect them to be able to express themselves. The students at Cambridge are not taught as is done in a school, but have to go to lectures, and must therefore have some power of taking down intelligent notes.

13. Would you say that there was need for the development of general and technical agricultural education in the earlier career of these students?—That is a little difficult to answer, but I believe it would be a great advantage if they could have it. I find that if students come up with a fair knowledge of elementary mathematics and of English they can usually learn to follow with intelligence the ordinary lectures provided by the University for beginners.

14. Have they had any instruction in chemistry?—Some of them have, but others have not.

15. Do you think it would be an advantage if they had more of such knowledge, or do you rather think it an advantage that the University should begin at the beginning with regard to these sciences?—It would be an advantage in many cases if they had more knowledge of elementary science; but not necessarily of applied science. If they had, for instance, better knowledge of elementary chemistry and elementary botany, it would make it much easier for them to follow the lectures.

16. Are many of the students sons of farmers?—Yes.

17. And others are those who aspire to become land agents?—Yes, a certain number. Large numbers of the sons of landowners come to the University, and since the Department of Agriculture was founded, they have begun to attend instruction given by the department.

18. Do they form a majority?—Yes. These students form a majority of those classified in the list put in as farmers, agents and owners. Probably a considerable proportion are also counted in the column marked "Unclassified." The 19 described as "Unclassified" for the current year I have since found to be all connected with land.

19. Do those of the land-owning class afterwards manage their own estates?—I suppose that is what they have in view. One cannot always follow what they do afterwards, but no doubt that is their idea.

20. Is there any training of students who themselves intend to become instructors in agriculture?—Yes, and I think that is one of our most useful lines of work. We get an increasing number of young men who have more or less distinguished themselves in scientific examinations at the University, and are looking about for a career. After taking their degree they join Agricultural Classes and take their diploma. They then undergo a year's training in applied science, and frequently stay another year to do research work. They are then fitted for the higher class of teaching and research in agriculture. At the present time out of my twenty diploma students I have at least a dozen who have taken honours degrees in science.

21. In what direction do you consider that this work of the University requires further development? What is your most pressing need?—I think the lack of buildings is the most pressing need at the present

time. We have no buildings of our own. The Professor of Chemistry has kindly let us have a part of his basement, and that is all we have, except that other Professors occasionally lend us rooms for special subjects. At the present time we are practically confined to four small rooms in the basement of the University Chemical Laboratory.

22. Do you consider the number of the staff adequate?—No, I do not think it is. As our students multiply we want an increased staff.

23. In what direction do you think there should be an increase?—One or two of our staff have been with us a long time and have done good work, and we are financially unable to increase their salaries.

24. Then if you had more funds you would do two things. First you would add to the buildings, and then increase the staff?—One can scarcely speak of adding to the buildings as we have no buildings. We should like to provide buildings, and increase our staff.

25. From what sources is the income of the University with regard to this department derived?—Our income at the present time is just short of £3,000 a year. About a thousand pounds is derived from endowments, including the endowments I have mentioned from the Drapers' Company and Sir Walter Gilbey. Then there is £1,000 from Government grant, and nearly £800 (which, however, varies from year to year) from County Councils. That comprises practically the whole of our income. Not having our own buildings the fees go to the University, or, rather, to the department that houses us.

26. I suppose a separate account is kept for your department?—Yes, we have a separate fund called the Agricultural Education Fund, which is, however, supervised by the Financial Board of the University. We have to furnish an account every year to the Financial Board of the University.

27. What is the attitude of the agriculturists in the neighbourhood of Cambridge towards your work?—I should say at the present time the attitude of the agriculturists in the district with which we are connected is distinctly favourable to us. The best evidence of that is that two years ago we found that we were spending considerably more money on what one may call field experimental work about the counties than our County Council grants came to—that, practically, we were spending endowment money on local work in the counties—so we sent an appeal to the County Councils and pointed this out to them. They replied by giving us considerably increased grants, as the result of their coming over and inspecting our work at the University Farm. Very great interest is now taken in work of that kind. Perhaps another evidence is that last year about 600 farmers visited the University Farm during the course of the summer. That number, of course, does not include the many who visited our local experiment stations.

28. In what type of work does the farmer take the most interest? Is it in the practical side of the work, or in the scientific side?—I suppose the things that most appeal to the farmer are outdoor experiments, breeding experiments, and potato experiments, and the pasture experiments.

29. Is there a farm attached to the University?—Yes.

30. Does it belong to you?—No. It belongs to a local landowner, who was very interested in agricultural work, and gave it to the department for nine years, rent free. We still have a few years more of the nine years to run.

31. I suppose care is taken with regard to book-keeping in connection with that farm?—The students have samples of book-keeping given to them derived from the farm, but I think the farm accounts as a whole would not be instructive to them because the farm is an experimental one; for instance, last year we had a good many hundreds of plots, each of which had to be sown separately and weighed separately, and under those circumstances the labour bill becomes very heavy, and the accounts are hardly instructive as typical of practical farming.

32. But book-keeping is one of the things that is considered?—Certainly.

33. Do the small farmers as well as the big farmers take an interest in your work, and come to see the results?—We have farmers of all kinds who come to see us, but it is chiefly the larger farmers and landowners.

Of course, we interest other people besides farmers and landowners; we get many visits from seedsmen, for instance, to see the plant breeding experiments; and much interest is also shown by millers, brewers, and maltsters. The brewers have asked our botanist to write papers for their journal, and the millers have asked for us to go to their Conference and tell them about the wheat breeding experiments. These experiments seem to be creating great interest, not only with farmers and landowners, but with seedsmen and people who use the products, like millers and maltsters.

34. Can you give the Committee some general idea of the scheme of the field experiments?—First of all, there is the University Farm. There we carry on a certain number of demonstration experiments in the way of manuring and things of that kind, but we chiefly lay ourselves out there for the more permanent style of experiments, not demonstration experiments, but experiments with a view to finding out new facts in agriculture. At present we have research on breeding wheat with a view of making better varieties for distribution throughout the country, and similar experiments with barley and several other farm crops, notably with mangolds. Then we also have animal breeding experiments, and a very large number of potato experiments, especially interesting to farmers from the Fens and from Lincolnshire, and, of course, feeding experiments and so on. These experiments are all carried on at the farm.

35. I presume also experiments with artificial manures?—Yes; those also are carried out to a certain extent on the farm but they are done chiefly through the counties. In each of the ten counties which are associated with us, we have demonstration experiments carried on here and there throughout the counties. These are demonstrations with artificial manures, or farmyard manures or both. Then we also have variety experiments where we send out varieties tested on the University Farm. And we distribute seeds up and down to the farmers throughout the counties; and they grow them and their friends go to see them, and so on. Then, of course, we have a rather large scheme of pasture experiments—one in Northamptonshire which is subsidised by the Board of Agriculture.

36. Farmers apply to you to assist them in carrying out various experiments, do they not?—Yes, we get a large number of inquiries about various things, and if we get an inquiry that we think can be solved by experiment we assist the farmer in carrying it out.

37. You have no difficulty in obtaining the land for your experiments, have you?—We never have had up to the present. We have always been able to get more land than we have been able to find time to experiment on.

38. I suppose you consider that the plant breeding experiments are likely to be of great economic value?—Certainly; I think they will be of very great value indeed.

39. One of the objects is to give the English wheats the hardness of the Canadian wheats?—That, and the power of resisting disease, which our botanist has found to be a character that can be inherited.

40. Are there any experiments made in that way where farmers send you artificial manures to be tested?—No; we do practically no work of that kind; the only thing that we undertake is to do tests of the amount of fat in milk according to the Board of Agriculture scheme.

41. To whom do you leave that work?—To the County Analyst; we do not wish in any way to take on his work.

42. I need hardly ask you the question that you would like to see the grants allocated to your institution increased?—I should like to see that very much.

43. With regard to the method on which the grants are allocated, do you think a grant ought to be allocated for a specific purpose—for instance, the staff? Do you think there ought to be a division between the grants given by the Board of Agriculture and those given by the County Councils, that they should each have their own sphere of operations?—That has not been done up to the present at all. The only earmarked money that we have had is £200 a year of our Government grant which is given definitely for the farm; the Drapers' Company's Endowment which is,

Mr.
T. B. Wood.
—
30 Apl., 1907.

Mr.
T. B. Wood.
30 Apl., 1907.

of course, ear-marked for the Professorship of Agriculture, and Sir Walter Gilbey's which was also given us for a definite purpose.

44. Then you do not think a change is necessary in that respect?—I do not think so; the present system works quite well in our case.

45. If farmers apply to you, do you send out lecturers?—In our agreements with the County Councils, we have a clause in which we volunteer to provide lecturers if the County Council ask for them, but up to the present we have never been asked for anything more than an odd lecture here and there. For instance, we go down once or twice a year to the Norfolk Chamber of Agriculture and give an account of the experimental work we have been doing in the last year, and the same kind of thing is done for the corresponding societies in Hertfordshire, there are two societies, one at St. Albans and one at Bishop's Stortford. Occasionally the same thing is done in Bedfordshire. In fact, in most of our counties we go down from time to time to meetings of farmers, and tell them the results of our work. We have not had any demand in recent years for what you might call continuous courses of lectures. I believe, however, that a certain amount of such work is done. We have a separate organisation at Cambridge for it, the Local Lectures and Examinations Syndicate; that is the Syndicate that runs the local examinations. They have a scheme for supplying lecturers on all subjects, and at one time, in 1893, 1894, and in 1895 they held quite a large number of lectures on agricultural subjects.

46. To what cause do you attribute the demand having ceased—was it because the lectures were not attractive enough?—Well, I personally gave a number of such lectures in 1892, and 1893, and 1894, and it was absolutely hopeless as far as I could see. I had three months of it in Devonshire, and gave what were supposed to be lectures on agriculture, but the audiences consisted of the parson in the front row, a few farmers in the second row, and labourers at the back, and I felt that if you talked to the front row you were ignoring the labourers, and if you talked to them you were boring the others. The task seemed to be hopeless, and, as far as I am aware, that is the general experience. Of course, where you can get farmers and those who are interested in the subject together, I believe you can do very good work, but to give a course of lectures in a village never seems to me to be likely to be successful.

47. You think the audiences ought to be classified as it were?—Yes; I think if you could get a farmers' audience, you would do very well.

48. If you got a farmers' audience, you think they would be interested?—Yes. At Cambridge they come to the lectures in the University Chemical Laboratory where we have the use of a big room, and give a more or less connected course from year to year. We get a large attendance, and I believe they benefit by it very considerably, but that is done through the Chamber of Agriculture, and those who attend are in the habit of going to meetings of the Chamber. They come there and ask questions, and they seem to like it and to profit by it.

49. Do you think that those lectures to succeed ought to be under the control of the Chamber of Agriculture and associations of farmers rather than syndicates under your own control?—I think that is one way of doing it; it seems to work pretty fairly well, but there might be other ways. I think the *sine qua non* is to get together a more or less homogeneous audience who all take an interest in what you are talking about.

50. Do you think the labourers ought to have separate meetings?—I do not think that you can do much good by lecturing to labourers.

51. You would limit it to farmers?—I think so.

52. (By Lord Barnard) I do not think we have yet heard exactly what your position is at Cambridge?—I hold a dual position in Cambridge. I am Sir Walter Gilbey's Reader in Agricultural Chemistry, and I also act as Secretary to the Department, and I believe I have also the title of Director of Studies.

53. How long have you been associated with this Department at Cambridge?—Since quite a few months after its foundation, early in 1893.

54. Might I ask you what you did before that. Were you engaged in agricultural teaching?—Yes. Before that I had been three months lecturing in Devonshire, as I mentioned a few moments ago. I also had done 2½ years as—I do not know that I had a title—but I was working for the Norfolk County Council, partly residing at a school, and teaching an agricultural class at that school, and partly managing the agricultural experiments in the County, and that kind of thing, and lecturing in the larger villages.

55. Were you brought up on a farm yourself?—Yes.

56. Have most of your staff, do you know, been associated from their early days with practical farming?—Yes. I should say most of our staff at the present time have.

57. Do many of your students—I think the question has been already asked—become teachers?—Yes.

58. Do you know of any who have become teachers?—I do. One of our men is Director of the Transvaal Department of Agriculture, several of them are in the Indian Department of Agriculture—I suppose that is what you mean by teaching for some of them are at Agricultural Colleges—two of them are in Egypt, three in the West Indies; and eight—I think there must be more, but I can count up eight—are on the staff of English Agricultural Colleges.

59. As you are in touch with the teaching profession, perhaps you could tell us whether there is such a demand for teachers as renders that profession a good opening?—Yes, I should say at the present time it is a very good opening indeed, and more especially so since there seems to be a demand for good men to go out each year to India.

60. Do you think one very useful part of the Department you are associated with is the training of men who are capable of acquiring further knowledge in agricultural science and of distributing it for the benefit of practical farmers generally all over the British dominions?—I myself regard that as, perhaps, the most valuable thing that we can do, because we get the honours men that you can turn into that kind of officer. One should start with a man who has had a good scientific training and who is looking round for a career, and that class of man we get in Cambridge in large numbers.

61. Can you tell me at all whether what you say of Cambridge, applies to other universities also—of course, only as a matter of opinion?—Not in such large numbers, because I do not know of any other place where you get such a large number of scientific students as we do. We have something like 130 or 140 men taking an honours degree in science every year, and that is comparatively a large number.

62. Would you tell the Committee what is the actual managing Board of this Department—under whose control is it?—The Department is controlled by a Board of Studies, just like every other Department in the University. Agriculture has its Board of Studies, consisting of the Vice-Chancellor and a certain number of *ex-officio* members, chiefly professors of Agriculture and cognate sciences, Chemistry, Botany, etc., a few members nominated by the Senate, and a member nominated by each County Council which contributes to the funds.

63. How many meetings do you hold of your Board?—Three regular meetings, and generally one or two extra meetings.

64. Do you find that the County Council representatives attend?—Some of them attend very well and some of them do not.

65. I think the Chairman has already asked you about the finance and you told us that the finances of the Department were kept separate and distinct.—Yes.

66. You have not a copy of the accounts, I suppose?—Yes, I have a complete set of the accounts from the commencement. (*Handing documents.*)

67. The University then, does not give any contribution towards the finance of the Department directly?—It does not directly.

68. You do not even indirectly get the use of these buildings; you have to pay for them, I understand, by giving up the fees?—Yes. I should not think the fees do more than pay for the chemicals and apparatus we use and the wages of the laboratory attendants,

69. I do not know whether you are personally concerned with the finance—I dare say you are?—Yes.

70. What is your opinion about charging fees. Do you think it is ever possible to get a larger contribution from students, say, towards the cost of this agricultural department?—I do not quite follow.

71. Could you make the fees or the contributions from the students larger than they are at present; could you get them to pay if you were to do so?—The great majority of our students, I think, would pay any fee you liked to charge them, and I think in the course of the next year or so we shall have to raise the fees, for the rent-free period of our farm soon comes to an end. I think we shall have to charge fees for the farm then, but we have charged no fee up to the present for farm classes.

72. As regards your County Council scholars, they would not be able to pay anything?—No, I do not suppose they would.

73. You would shut them out altogether then, probably, because their fathers would say “We cannot afford to pay these fees”?—I think under our bargain with the County Councils, we should never propose to raise their fees. The fees generally in all the university departments are under the supervision of the Financial Board of the University; you cannot charge just what fee you like. The amount of the fees at the present time comes to between £20 and £25 a year for each student, which is very small indeed, I think.

74. That does not appear in these accounts?—No, it does not come to us; it goes straight into the funds of the laboratory where we are housed.

75. Who supervises the examination of your students?—The Board of Studies.

76. Do you consider in view of the fact that you receive moneys both from local authorities and the central authority, that that works satisfactorily?—Yes, I think so. You see the University is a very experienced examining body, and although the Board of Agricultural Studies nominates, the University appoints the examiners. The Board of Studies draws up schedules and regulations, but they have to pass the Council of the Senate and then the Senate itself, so that they are very well supervised by an experienced examining body.

77. Is your department under any obligation to return any statistics or information as to the results of the examinations to the Board of Agriculture and the Councils?—No, I do not think so.

78. You do not test?—We have never been asked for any information as to the results of the examinations; the only thing we do in that way is we examine for one or two other institutions, and we report to their County Councils. We used at one time to take in students for a six weeks’ practical course, but there are two of our County Councils who have laid themselves out to make that the chief part of their work, so we gave up doing it. These County Councils ask us to examine and report from time to time on their students, and on the strength of our supervision, other County Councils send their short-course students to these institutions.

79. The County Councils do carry on institutions of their own as well as supporting others then?—Some of them do.

80. Bearing on the question the Chairman asked you as to the preparation of the students, do most of them succeed, or what proportion of them fail?—Shall I give them yearly for a number of years?

81. For about two or three years.—For last year the total number who presented themselves for the first or elementary part of the examination—that is the one for the degree and the first part of the diploma—was 29. Of those, 10 failed and 19 passed. That is for the elementary examination for the degree and the first part of the diploma. In Part Two, the final diploma examination, seven presented themselves; one failed and six passed. The year before, for the degree and the first part of the diploma, 17 presented themselves; eight passed and nine failed.

82. It looks rather as if the diploma students did better than the degree students?—Yes. The diploma students are all serious students.

83. (By Mr. Middleton.) They are weeded out in the first examination?—Yes. The man who goes in for the diploma is generally a hard working man, who means

to get through and take up agriculture as his real business in life.

84. (By Lord Barnard.) Do the diploma students all go through the degree examination first?—Yes, although they do not all necessarily get the degree.

85. You speak of an increased grant. That would not necessarily go towards the providing of buildings, would it?—We are raising subscription for buildings that we are getting on with. As regards building, I think anything in the way of an annual grant would practically only be used for maintenance.

86. The real object for which you wish an increased grant is one I can well understand, because I know of a similar case; it is that you think that the members of the staff are inadequately paid?—Some of the members of the staff are inadequately paid.

87. If this Committee should recommend an increased grant, on what grounds could they ask for it? At present, as we have heard, they could say that the teachers are not adequately paid, but are there any other grounds? Could you extend, for instance, the usefulness of the departments by increased funds?—Yes, certainly.

88. Might I put it in this form? In what way would the public get increased advantages if the public subscribed larger funds?—In this way: I think certain members of our staff who are all-important to our success may leave us if we cannot provide them with a better income. If we are to train these students who want advanced teaching, it seems to me that one cannot carry out advanced teaching and make these men keen workers, and give them the sort of spirit of research they want when they are going out to a new country and have to find out things, unless you have active research going on in the teaching institutions. It is very important for the turning out of first-class men of that kind that you should have active research going on, and you cannot get the type of teacher who distinguishes himself in the field of research unless you give him a proper income.

89. You have practically almost answered the next question I was going to put to you. You mentioned that your staff were very much interested in plant breeding and so on. That practically is research, is it not?—Yes.

90. Is that in your opinion almost essential?—Absolutely essential if you are going to turn out men of the kind that will be useful.

91. Would you agree with what the principal of a college, in which I am interested, in the North of England, put to me when I was discussing the question with him, that in the higher scientific education, research could hardly be separated from the other subjects?—I think it is absolutely necessary that you should have research as well if you are to get the right spirit in the men.

92. Do the farm accounts appear in this document that you have handed to me?—No; the only entry you see in these accounts is the £200 of the Government grant and some small payments that we think should be paid for out of the general funds.

93. Who runs the farm?—The Professor of Agriculture.

94. I suppose he makes it pay as far as he can?—I do not see how you can ever make a farm pay where you have to carry on experimental work.

95. Another subject touched upon by you was the question of analyses. I have noticed that a good many colleges seem to do a great deal of work under that head. I should have hardly thought that as provision was made for another public body, namely, the County Council, to do that work, that it was, properly speaking, educational work, and ought to be provided for out of those grants, unless you consider it necessary, as perhaps you do, as research work?—We do practically no work of that kind—what I might call ordinary routine analyses—If a farmer wants to find out something in the nature of an investigation, we are always ready to take part in that and do what we can, but we do not do any routine work.

96. The only other matter as to which I should like to ask you a question is as to what you said about the local lectures. I think you informed us that there was no demand for local lectures. Do you think that farmers as a class would come and attend lectures unless they

Mr.
T. B. Wood.
30 Apl., 1907.

Mr.
T. B. Wood.
30 Apl., 1907.

were offered to them and unless they knew that there was some opportunity of getting them if they asked for them?—I meant that the County Councils have not availed themselves of our agreement with them to give lectures if they asked for them. When our scheme was organized, we drew up a sort of agreement between ourselves and the County Councils, and one of the clauses in that was that we should send out lecturers if asked, but up to the present the County Councils have not asked us to do it except in isolated cases.

97. Are you aware that in the North of England, in the College with which I am connected, the system of lecturing has been very successful?—Yes, I believe it has.

98. In that case I think I am right in saying that the County Council do not ask for them as a rule, but that the College generally offers them. You do not know that, perhaps?—No, I did not quite know how it was worked, but I know it has been a success in the North.

99. I am referring to a series of lectures, not single lectures?—The local Councils did that in Cambridgeshire at one time, but it was no kind of success at all.

100. (By Lord Moreton.) Would you tell us what is the age of the students, generally, who go up for the diploma examination?—Just the age of the ordinary undergraduate, from 18 to 20 years.

101. As regards the farm, have the students any chance of doing practical work?—They do not do any manual labour, but they go all round the farm and see what is going on. They have to do their laboratory work and so on, and they do not get a great deal of time for instruction on the farm during the term, but our general advice to them is that during the vacation, from June to October, they should go either to a farm belonging to their relatives, or to some other farm, and take up practical work.

102. How many chances does a student have supposing he fails?—It is only the Honours examination that you cannot go in for more than once. For these preliminary examinations, you can go in as often as you like.

103. (By Mr. Lamon.) You have had rather an unfortunate experience with local lectures?—No, we have had no experience really.

104. I am referring to you personally. I was in Denmark last year, and one of the leading officers of the Board of Agriculture there, told me that during the preceding six months he had delivered 100 lectures in small villages in Denmark, and that his audience averaged about 150, and that the maximum was 600. With regard to your experience I should like to ask you why there is such great enthusiasm in that country, and whether you think it is due to the fact that most of the farmers there have been to secondary schools or to agricultural high schools, and whether secondary education of that kind would foster more interest in the scientific side in this country?—It seems to me that the number of the audience does not convey any certainty as to whether it is doing good or not. For instance, when I was lecturing in Devonshire—there were five of us giving lectures during that winter, and we had an average audience of 56—but you have already heard my opinion. I do not think it did any good at all, and I do not think that numbers really convey anything. I do not see how you can, in an English village, get an audience of the right kind, because, supposing in a village there will be four or five farmers who are near enough to come in, the remainder of the audience would probably be necessarily not very much interested, and I do not see how, in Denmark either, you would get a suitable audience of 100, unless they came a great distance. Possibly labourers might come in, but I do not see what good it would do the labourers if they did.

105. I should like to ask you a question on another point that you referred to. You said that you had several students who had gone out to the West Indies. It has come under my notice what excellent work they have done out there, and I should like to know whether you have any branch for instruction in tropical work, or whether those men have merely been through the ordinary course?—They have merely been through the ordinary course and seen how investigations are carried out; they have done no tropical agriculture or anything of that kind; they have merely seen the general sort of

way one goes about trying to investigate any particular problem that may turn up.

106. Do you think if there should be a larger demand as is very possible in the near future for men of that class, that under your present system you could keep pace with it?—I think so. I think that is the advantage of an Agricultural Department in connection with a large scientific centre because, as I said before, we have 130 or 140 men who have taken an honours degree in science, and most of them when they have their degree, look about to see in what direction they can best work; and I think as the openings for agricultural experts increase in number an increasing number of men will take up the subject.

107. That would also apply perhaps not to experts, but to estates managers of tropical estates, many of whom have not the slightest scientific knowledge. That is a department in which there would be a very large opening, is it not?—I do not think any of our men have taken up that line at present; it is a line I do not know about at all; I do not know how one finds out about the openings in that line.

108. (By Dr. Somerville.) Do the men that are taking the degree in agriculture, or the diploma, get any choice as regards the number of subjects?—No; they do not at the present time; they have to take certain definite subjects.

109. I suppose no provision is made at the University of Cambridge for encouraging students to apply their historical knowledge in the direction of agriculture?—Do you mean in the way of lectures? There is no provision in the examination for historical knowledge.

110. Do you think it would be a good thing to widen the basis of examination, to take, we will say, economics or history as alternatives to science?—They can take their degree in economics; there was a new economics degree founded last year—an economics tripos.

111. But not specially designed for agricultural students?—No.

112. In Cambridge you have a lectureship for agricultural economics, but I suppose attendance at those lectures is not of much advantage to a man going in for this course?—No; the lectures given by that lecturer are only about four in a year. There is, however, a provision in the statutes regulating the diploma examination; for putting in certain subjects and leaving out certain others.

113. Would the initiative in such a change come from the Board of Agricultural Studies?—Yes.

114. Do you find that the scholars the County Councils send up to the Agricultural Department of the University are to a large extent the sons of farmers?—Yes, I should say the majority of them are certainly the sons of farmers.

115. I think you have already told the Committee that there are few, if any, secondary schools in East Anglia, which might act as feeders for the University Agricultural Department?—I do not see why any secondary school should not train suitable boys for the Agricultural Department; we have one special school at Cambridge which lays itself out to do that.

116. Do you find that youths come on from this secondary school at Cambridge?—It has only been going quite a short time and it is only just now that the boys who have started there have got up into the top forms and are ready to come on, so that we have not had an opportunity of judging yet. The agricultural course there begins in the lower forms and it takes them four or five years to get up to the higher forms where specialisation begins.

117. Is not Bedford entering upon some such scheme also?—I am not aware of that.

118. Has not Bedford in point of fact, got something in the nature of a secondary school at Ridgmont?—Not a secondary school; but it is what you might call a place suitable for six weeks' courses for practical work, dairying and that sort of thing.

119. Have not they the intention of adding an agricultural side to the school in the county?—I do not know.

120. Would you not think it is conceivable that the bent of youths to engage in agriculture would be encouraged to a great extent if in the ordinary grammar school was introduced something in the nature of

an agricultural school, which would act as a sort of bridge between the grammar school and the Agricultural Department in the University?—I do not know that I have any very definite views on that subject. My view is rather that they should teach elementary science in a sound way than that they should try and teach them applied science. I much prefer that they should learn the elementary subjects thoroughly.

121. Would you be disposed to suggest that if the teaching of elementary science was carried far enough the youths who come up to Cambridge might be allowed to pass an examination on the strength of such knowledge gained before they came up?—I do not see why they should not do that. The more they know to start with, the more time they will be able to devote to advanced work after they come into residence.

122. As regards your financial future, I suppose that in a short time you will be called upon to pay rent for the experimental farm that you now occupy, or for some other farm that you may acquire?—Certainly, we shall.

123. What is that sum likely to amount to?—I believe if we continue with our present farm, the rent will be something over £200 a year.

124. Is it not also the case that the Gilbey Benefaction automatically runs itself out?—Yes, in about three more years it comes to an end.

125. What will that mean?—That will mean £200 a year decrease in our endowment.

126. That is a second £200 that you may possibly lose?—Yes.

127. I suppose the buildings you contemplate erecting will cost a considerable amount for maintenance? Is there any special fund for the maintenance of those buildings?—Most of the buildings are maintained out of the fees students pay.

128. Apart from the buildings, you see your way to finding yourself poorer in the near future by £400 a year than you have at present?—Yes; we have that to face.

129. Unless that £400 a year is made up in some other quarter, your operations will be considerably hampered?—Yes, unless we can make up part of the rent by charging fees for the working on the farm.

130. So that whilst you aspire to have your sphere of activity enlarged, you are threatened with curtailment?—Yes.

131. You would like not only to have this £400 a year supplied from some other source, but possibly you might like £400 a year in addition, which would mean a gross addition to your income of £800 a year?—Yes we certainly should.

132. Reverting for a moment to the University; Extension Lectures, you are aware, as you have admitted, that in some parts of the country, local lectures are a great success. In any case, do you think that men engaged as teachers and investigators of agriculture should have their time cut into by giving such lectures?—I think there should be special lecturers for the purpose.

133. If the funds were forthcoming, do you think that lectures could be better supplied by a department like yours than by a county staff which was cut off from the direct influence of the University?—I think in the Eastern Counties it would be an advantage that the lecturers should be connected with Cambridge University.

134. Do none of the Counties maintain a lecturing staff?—I think the staff of the Institute in Essex go about the county and give lectures to a certain extent, but I fancy they are not so much in the nature of courses as isolated lectures on definite experimental results.

135. How do you think the rank and file of young farmers is going to be reached if in fact there are no local lectures, and where they are confined to University centres?—I think a great many of them go to Chelmsford and Bedford: we examine a certain number every year for Norfolk and Suffolk with a view to awarding scholarships for that purpose.

136. But, still, you would admit that a very small number of the farmers find their way to those two places?—Very small.

137. Do you find the peculiar constitution of your Board of Studies is in any way unsatisfactory?

rather refer to the fact that your Board of Studies includes a considerable number of men who are not necessarily members of the University. You do not find that those men are in any way an incongruous element in the constitution?—No, we have always got on very well on the Board.

138. You do not find that there is any opposition on the part of the University to such members being on the University Board?—No, not at all.

139. You said that the fees paid by the students all go into the laboratory in which you are housed?—Yes, practically all.

140. Do the botanical fees go into the botanical laboratory?—Yes, except occasionally we have a sort of teaching class of botany for which we borrow a room in the chemical laboratory, and then we get those fees because no chemical apparatus is wanted for them.

141. Fees, I suppose, are exacted for botany, chemistry and geology?—There are no fees for the lectures on applied sciences unless they involve experimental illustration.

142. Fees would be charged, then, for agricultural chemistry?—Not for lectures, only for working in the laboratory.

143. I suppose the fees for the second part of the diploma course are lower than those for the earlier stage?—They certainly are; they come, I should say, to something over £20 for their first year for the elementary work, and rather under £20 for their second year.

144. What do you reckon it costs an agricultural student who is going to take his degree, and is a member of the University, to live for a year?—You cannot really lay down a rule, because it all depends on the man; the irreducible minimum would be something like £100 a year.

145. You find most of the students spend more, do you?—Yes, most of them.

146. Would £150 be a likely minimum?—Yes, that would be a comfortable allowance.

147. In the case of a man coming up and going into residence and not necessarily being a member of the University, what do you say?—It would be much less than that. We had one student who resided for two years and got his diploma, and his total income was the county council scholarship of £65 a year, out of which he had saved money at the end of the time.

148. That, of course, is only for about six months' residence in the year?—Yes.

149. So that you think the agricultural education in Cambridge would not prove much more expensive, if at all more expensive, than in some of the other education departments?—No, I do not think it is any more expensive at all.

150. (By Mr. Staveley-Hill.) I suppose students who come up for a diploma as distinct from a degree need not necessarily reside in the University or in the town of Cambridge either?—No, the diploma examination is an open examination.

151. They could reside at home and attend the University course without very much additional expense?—That is so. The examinations, however, differ from most other agricultural examinations in that they include practical work in the sciences and practical agriculture on the farm.

152. What is the acreage of the University farm?—Between 140 and 150 acres.

153. You have ten County Councils who contribute to the funds of your department?—Yes.

154. Are there other County Councils who do not contribute who send students up for the diploma?—There have been such cases, but it is only what I might call occasionally. For instance, I found one of our men, after he had been at Cambridge for a year or two, was a scholar of the Lancashire County Council who had distinguished himself in an open scholarship examination and had come to Cambridge. Of course they cannot send them up as members of the University.

155. Do you give any facilities for the training of teachers who instruct in rural schools?—Yes.

156. Do you find many of the teachers avail themselves of them?—I think we began in 1893, and there has been a course every year for teachers in elementary rural schools, except one year, when there was a smallpox scare or something of the sort and we

Mr.
T. B. Wood
30 Apl., 1907.

Mr. T. B. Wood. had to put them off. We have had as many as 120 in number, and as few as 40.

30 Apl., 1907.

157. Do lecturers go down to the different districts for the purpose or do the teachers come up and attend the classes?—Both. We have had a winter class at Norwich, and from time to time we have had a course in the winter at Bedford, too, and occasionally at other places, and then during the summer holidays they come to Cambridge and attend the class that we hold there in August every year.

158. In answer to the Chairman you mentioned the case of a boy who had come up from Wellingborough?—Yes.

159. Are there any teachers from that type of school who avail themselves of the facilities that you offer?—No—though it is not quite correct to say “no” because occasionally one or two come with the elementary ones, but we have not had any special course of instruction for them.

160. You have told us that a considerable number of persons visit the farm to see the various experiments that you are carrying out, or apply to you for information. Are the bulk of those persons more interested in what you might particularise as research experiment rather than the ordinary branches of experiment?—I do not quite follow.

161. You spoke of research just now as being one of your prominent features of experiment, and I ask you whether the persons who come to you for experiments are persons more interested in that particular branch of study rather than in the ordinary farming experiments?—I do not think you can tell that, because all the things go on side by side. They always evince the greatest interest in breeding experiments of all kinds; those are an unfailing source of interest, but, of course, the interest varies with the different districts. People coming from the Fens want to see potato experiments; those are the things that interest them. It just depends where they come from; people from one district like one kind of thing and people from another another.

162. (By Mr. Latham.) With regard to these young men who come to you. You said that you wished them to have a fair knowledge of farming?—You mean when I examine them to see whether I can recommend them for a scholarship?

163. Yes?—I do not think I said a fair knowledge of farming.

164. I think those were your exact words?—That is not what I meant, then. What I want them to have is a fair knowledge of elementary arithmetic and mathematics and a fair general education so that they can express themselves and understand things, and then, as I say, I find that out by asking them to describe what kind of farming goes on in their district; that is only an instance of the kind of question one asks them. It is not so much to ascertain their knowledge of farming as to see whether they are fairly intelligent and whether they can express themselves well.

165. I suppose the ordinary undergraduate does not know much about farming?—No; the ordinary undergraduate does not, of course, unless he happens to be of a farming breed; most of the County Council students, however, are farmers' sons.

166. Possibly that is so; but do you find that they know much about farming?—If they were the sons of farmers I should not recommend them for a scholarship unless they could write an intelligible account of what their fathers grew on their farms. I do not think we should recommend any of them as suitable for a scholarship unless they were intelligent and were likely to profit by it.

167. Do you find that many of them, after they have obtained their degree, do actually become farmers?—A good many of them do go back to farming, the majority of them I should say do. But among our County Council students we have had several who have had the good fortune to distinguish themselves very much; in fact, the man who is now Director of Agriculture in the Transvaal was at one time a student of the Huntingdonshire County Council, and two of the junior members of our staff at the present time were county council students. So that there are a certain number who turn out very smart indeed, and then they see that they can get a more immediate return, perhaps, by taking up teaching, or some branch of that kind, than they could by going back to farming, but otherwise the majority of them do go back to farming.

168. You said just now that students in the term had not much time for farming on your farm, and that you recommended them to go on to farm work in the recess?—Yes.

169. Is that without a teacher?—No, there is our farm manager there.

170. But you said on their own or other farms in their districts?—We recommend them to go on to our farm, of course; but sometimes they have fathers or relatives who have their own farms, and who want them to see the kind of farming that goes on in their own districts.

171. Do you get any record of what they have done in the recess?—No, we do not; but we find out what they have done when we come to examine them next.

172. With regard to land owners' sons and land agents' sons, do you find that they have any general knowledge of farming?—No, I should say they do not as a general rule.

173. I see you have given us a list of your various experiments, but you do not give us any results?—I have copies of the results here if you would like to see some of them.

174. Yes, I think they would be very useful.—This is our ordinary guide to the experiments, which we give to the people that come to visit us, as a sort of guide to show them the way round. (*Handing book.*) This is what you may call a farmers' bulletin, for explaining to the farmers any one experiment. (*Handing another book.*)

175. Do you take any interest in teaching draining?—No, I cannot say that I do, particularly; that does not come in my branch—my branch is chemistry.

176. Is it at all within the province of your department?—I believe it is in our schedule, and I have no doubt the Professor of Agriculture deals with it in his lectures; but it does not come in my branch.

177. I was rather disappointed to hear you say that these local county lectures were not a success?—Of course, I only gave you the result of my own experience; I say I could not make a success of them. I got an audience, you know; but I did not feel that I was getting at the kind of people that I was paid to get at.

178. You spoke just now of the parson being in the front, the farmers in the second row, and the labourers at the back. Perhaps the parson was the chairman of the meeting?—No, I only instance that as the kind of class you get at these meetings; they are such a mixed audience.

179. Yes, but they are all interested in agriculture?—I do not know. I found if I tried to interest the front row I was not getting at those in the second, and if I talked to the back row the other people in the front got absolutely bored.

180. I should have thought that the farmers and the labourers were so absolutely wrapped up in agriculture that what you taught one must have benefited the other?—Well, perhaps I did benefit them, but I did not feel that I did; I felt all the time that I was not fulfilling my vocation.

181. Still, you would scarcely like to throw cold water on these lectures, would you?—No, there are districts where I believe they do very well indeed, but in the districts that I have had experience of, I have not found that we really were doing any good by the lectures in villages. On the other hand, I believe we do a great deal of good by the lectures at meetings of farmers, and at the Farmers' Clubs, and at the Chambers of Agriculture, where we get a uniform audience that you can talk to, and where we find that a fair proportion of them understand and take an interest in understanding what you say.

182. Do you hold lectures in towns on farmers' market days?—Yes, we hold many lectures on market days in the Chambers of Agriculture.

183. Are they well attended?—Yes, always.

184. Do they ask questions, and take an interest generally?—Yes. You see that is the advantage of this method, they are all thoroughly interested in the subject, and they are used to debating and asking questions in their own Chambers of Agriculture.

185. Do you do anything in horticulture?—No, we do not; nothing at all.

186. That is not in your department?—No.

Mr.
T. B. Wood.
30 Apl., 1907.

187. Have you ever tried labourers' lectures?—No, we have not done anything in that line at all.

188. (*By Mr. Davies.*) I think you told the Committee that you considered it very important to have a department of agriculture at a University centre. What advantage do you derive from the fact that it is in close proximity to the other departments, such as the Chemical Department, for instance?—What advantage besides that?

189. Yes.—First of all I think the great advantage is that you have a large number of men taking their degree in science every year, and they come on to agriculture afterwards. We have, perhaps, 130 or 140 who take their degree in science yearly, and who do not know what they are going to do, and they wait and look round, and, as I say, many of them come on to agriculture. At the present time we have a number of them doing agriculture, with a view to fitting themselves for agricultural appointments. They have had a very good scientific training, taken an honours degree, and would be just the men suitable for an agricultural appointment. That is one advantage.

190. When you have the agricultural buildings will there be any need for an alteration in the chemistry department?—Yes. I do not think we should teach any of the elementary chemistry in our buildings. If a student wants to do agriculture and he has not done it already in the tripos then he will have to go to the ordinary existing instruction in chemistry at the University, and come to us afterwards.

191. I think several members of the Committee made a point that there were posts abroad for agricultural experts and people who had had scientific training in England. Would it be the intention of your department to specially cater for men of that kind?—Certainly.

192. What special advantages could you give that other centres could not give in that direction?—I think the preliminary advantage is that we first of all have the men who have taken their degree—we have 130 or 140 of them every year, which would not be the case with an isolated institution set down somewhere in the country away from a university; they would not get that advantage.

193. What special advantage do you give in Cambridge which those other Universities could not at present give?—I do not know that we could claim to give any other advantage that another university could not give, except that we are on a larger scale, and also the point that I have mentioned with regard to the number of men.

194. You have no short course now, I understand, in your department?—No, not at present. We agreed with the County Councils that we should give up that part of our work, and recommend all our counties to send their students to the already existing short-course institutions, and we undertook to examine those students.

195. Do the scholarships which the County Councils give follow on the results of those examinations?—Not exactly. They send their students, and we examine them at the end of the course, and our report is sent out to the County Councils so that they can see whether the institutions are being conducted as they wish them to be conducted.

196. I understand the scholarships are given after you personally have examined each student?—Yes; but it is not a competitive examination. They send the students up to us and ask us whether we think they are the kind of student who would benefit by a short course.

197. How do they choose them, do you know?—I do not know that; they simply come to us with a letter from the County Council. In some of the counties, Essex for instance, they give further scholarships on the result of our examination at the end of the short course. We have two Essex students at the present time who were awarded scholarships last year.

198. Supposing Cambridge was specialised and catered specially for the agricultural expert, and had opportunities of doing a good deal of research work, do you consider you would then attract men from other university colleges?—We do that now; we have several graduates of other Universities who are doing research.

199. (*By Mr. Medd.*) When you receive grants from the Board of Agriculture, do you furnish the Board with a statement of the exact manner in which the

grant is going to be applied?—We furnish the Board with this kind of account—

200. Do not trouble to show it to me. Must the Board be first of all informed exactly how you intend to apply the grants specifically? That will meet my question.—Only in a general way; we make an estimate for the whole of our income.

201. At the end of the year do you furnish the Board with a statement exactly how it has been applied?—Yes.

202. No portion of it goes towards defraying the expense of lectures attended by other than agricultural students?—No; certainly not.

203. In addition to the grounds which Professor Somerville mentioned for you to urge further claims he omitted the experimental and research work which I imagine you regard nationally as your most important work?—Yes, I think that it is indispensable.

204. From a national point of view rather than from a purely local one?—Yes, not only from the point of view of its economic importance, but because you want research so as to get the proper spirit in your advanced students.

205. Exactly, and money is urgently needed in order to enable you to develop that work as you consider it ought to be developed?—Yes, I think so.

206. What is the exact relationship of these ten affiliated counties to your Board of Studies—they each have a representative?—They each have a representative.

207. Does your Board merely act as an Advisory Committee saying how funds should be dealt with by you if you give any, or how lectures should be supplied by you, and so forth? What are its functions?—The functions of our Board are to manage the teaching and examining of agricultural students in the University, and it has the power also of appointing examiners for any other institution—I mean generally acting as a public examining body if it likes. It also manages its own funds.

208. It has very little direct relationship then to the agricultural education of the individual counties?—As a Board I should say very little.

209. It never attempts to suggest any scheme by which the most appropriate types of school and forms of instruction might be introduced into these different counties?—No, it does not.

210. Each county in that respect works independently?—Yes. The only way in which it has assisted in that is that members of our staff have been co-opted on to the County Council Education Committees.

211. I understand each of the local bodies makes a contribution to you, and I think that contribution has increased by 50 per cent.?—Yes, it was increased by 50 per cent. three years ago.

212. As a matter of fact, in this area of 10 affiliated counties you have no permanent institution whatever for intermediate agricultural education except the technical day school at Bigods in Essex. There is a complete blank between the elementary school and the University—I mean there is no *bona fide* intermediate school of agriculture taking students from the age of 13 or 14 up to the age of 16 or 17?—That is so.

213. The only form in which that education is given is by occasional short courses and lectures and continuation classes—I am leaving out the work at Chelmsford, of course. Perhaps you may not know what the individual courses are?—No, I cannot say what they do in the other counties.

214. Coming to Cambridge itself, you have a most elaborate system of continuation schools. Do you know anything about the horticultural or agricultural work that is done in them?—No, I cannot say that I know very much about what is done outside in the counties; I used to, but I do not know now.

215. Do any of your university students enter for the National Diploma in Agriculture?—No—why should they?

216. You consider yours equal to, or superior to that?—Yes, we have the same subjects with the addition of practical ones. We set great store on the fact that our people have practical training in the laboratory, and all that sort of thing, and that they do not learn their work just from books.

Mr.
T. B. Wood.
30 Apl., 1907.

217. Part of your *viva voce* examination is conducted on the farm?—Yes. Of course, another reason is that the National Diploma comes in the middle of our May term, which already has only a month for work before our own examination. If our men were to take a week out of that, it would make our work impossible.

218. The National Diploma, as at present constituted, is not useful for your purposes?—I should say not.

219. Can you suggest any mode by which the standard of examination might be raised, or its character modified in such a way as to attract your students?—I take no interest in the National Diploma at all. I think the University is the best examining body, and I do not see what you want any other for.

220. In regard to the county scholarship students, the majority of them are from the land in the sense of being sons of farmers, are they not?—The majority of them are.

221. Do the majority of them go back to the land to farm afterwards?—I should say so; from those that one can follow, I should say they do go back to the land.

222. Could you give any idea as to the relative proportion of those who become teachers and those who become farmers of the county scholars?—I think very few become teachers. There is one in the Transvaal now, and two on our staff at the present time.

223. You think the majority go back to actual farming?—Yes. One of them did have a teaching post in Ireland for a time, but now he has given that up and is farming.

224. Do the scholarships cover the fees only, or are they sufficiently large to cover maintenance?—That all depends on whether the student joins the University or whether he does not. If he joins the University, the largest county scholarship, I think, is £65 a year, and it would cost him certainly £100 as the minimum. If on the other hand, he does not join the University, but simply takes lodgings and lives privately, then I think he could live on his £65 and pay his fees, in fact, as I mentioned, one man actually saved money out of his £65.

225. Do you think £100 is the lowest minimum for those who join the University?—Yes, as I said before, I consider that is an irreducible minimum.

226. You mentioned the County School at Cambridge. Of course it has not had any opportunity yet of giving any definite tests, but still, so far as you know, you believe it to be good?—Yes, undoubtedly.

227. How do the farmers regard it?—They send their boys there in large numbers.

228. They seem well disposed towards it?—Yes, I think so, certainly.

229. They are not misled by the use of the word "agriculture" into the belief that farming is taught?—No, I do not think so.

230. You say you have provided short courses for teachers in the summer. Have you ever thought of providing courses for elementary teachers continuously throughout the year so as to enable them to study whatever they may be teaching at all seasons of the year?—That is done to a considerable extent; it is done at Norwich, for instance.

231. Yes, I know it is. Could you do it at Cambridge?—It has been done at the County School, but not by us.

232. It was done last year at the County School was it?—Not last year, I think, but I believe the year before or two years before it was done.

233. Do you ever come into contact with the local correspondents of the Board of Agriculture?—Not officially, but I know a good many of them privately.

234. I was referring to your agricultural work. These correspondents do not come into communication officially with you at all?—No.

235. They are not a conduit pipe between you and the Board?—No.

236. You do not utilise them to represent your views in any way?—No.

237. Have you given any thought as to whether a permanent Consultative Committee of the Board would be more useful than these correspondents—a Committee that would meet periodically to discuss these matters; whether that would not be more effective than a system of isolated correspondents. The consultative committee would be on the analogy of Dublin or Paris or the Hague, a permanent body of men interested in agriculture, and with a knowledge of it, who would meet periodically to discuss matters in their own districts and formulate policies and so forth whereas, of course, isolated correspondents never do meet. Have you given that matter any consideration?—No; I do not think that I quite understand. It is not in my line at all.

238. You yourself have not found the local correspondents of any use to you in your work?—No, I have not come across them except privately.

Mr. B. B. SAPWELL called and examined.

Mr. B. B.
Sapwell.

239. (By the Chairman.) You are a member of the Norfolk Chamber of Agriculture?—Yes.

240. You have no official connection with the University of Cambridge?—No.

241. You are prepared to inform the Committee of what you think as a practical farmer are the changes that ought to be made in the curriculum of the Agricultural Department, and you will give the Committee your impression as to the greater usefulness to which this department of the university in your opinion can be put?—I am not prepared to suggest any changes, my lord, but I am prepared to say what I think of it. I am a member of the County Council, of the Higher Education Committee, and I am Chairman of the Cattle Diseases Committee, and one of the Board's honorary correspondents. I have had to do with conducting experiments for many years, and I superintended the experiments in Norfolk long before they were thought of at Cambridge. I have taken great interest in the work they are doing at Cambridge, and I visit there every year unless for some reason I am unable to get away. We think most highly of the work they are doing, especially at their experimental farm. So much do we think of it that at present we are considering the advisability of establishing an experimental farm in Norfolk, which we should put entirely under the supervision of the Professor at Cambridge. We should ask him to recommend a manager of it, and we should ask him to arrange for the work to be done with the idea

of supplementing the work they are themselves doing at Cambridge. I think a couple of years ago we voluntarily doubled our contribution that we give them, because we thought so highly of the work they were doing; and we send agricultural scholars up there from Norfolk: they are not really scholarships but you might call them bursaries, because there is no competitive examination. If a farmer's son or any youth interested in agriculture appears a likely person we send him to Mr. Wood, and, if he thinks him suitable, we give him this bursary, which amounts to £65 a year; but we make this bargain with him, that he must spend the recess on a farm doing practical work, either with his relatives or with anybody he chooses. We have been very pleased with the results of those few men, but I am sorry to say they are few that we have sent up. The experimental work is very valuable as far as it goes, but there is not enough of it. The cross-breeding of animals might be enlarged to an enormous extent, and the same with the cross-breeding of cereals and all that. That is most valuable as farming goes, and with more funds that branch of the work might be greatly increased. All over the world, as you probably know, these cross-breeding experiments have been followed with a great amount of interest. Every year Mr. Wood comes down to Norwich and lectures to us upon his experimental work, and also to Lynn sometimes; and we find the people who go there are most interested, and, in fact, it is quite a red-letter day in the year when he comes down; they have those meetings reported

241 c

241 d

Mr. B. B.
Sapwell.
30 Apr., 1907.

in large print, and a great number of agriculturists attend them, and they always hear something new. For instance, a few years ago, the scientific cultivation of land was considered an inferior sort of thing; but, if you reckon up the money value that a little knowledge of that sort has meant to us in Norfolk, and in other counties the same, spread over thousands and thousands of acres, it is very considerable, and is entirely out of all proportion to the time that is spent in acquiring the knowledge.

242. The Diploma which is given at Cambridge is recognised by the farmers as a very valuable asset, is it not?—Most valuable. As Mr. Wood just said—I heard his evidence—the difference between that and the National Diploma is that we consider there is such a large amount of practical work attached to the Cambridge Diploma that makes it, in our opinion, more valuable.

243. I do not know whether you could give us any information as to why you attribute the lectures at Cambridge not having been a success?—I do not say they are not a success. I know Mr. Wood used to lecture years ago before he took this work up when engaged by the County, and I am inclined to think that the lectures that he gave there were most interesting and most valuable, and although a great many people attended as they would attend Church, as a sort of religious duty, I know a great many other people who being practically interested in the subject found them most interesting.

244. Do you think the lectures ought to be limited to farmers; that there should be a different set of lectures for farmers and a different set of lectures for labourers?—I do not believe you will ever get labourers to go to lectures. It would not be worth while sending a high-class man down to lecture to them; they really do not know enough; they are not educated enough to get any benefit from a high-class lecture. An elementary lecture might be useful to them, but I think it would be a waste of money to send a first-rate man down to lecture to labourers.

245. Is it your view that more should be done with regard to secondary agricultural education. Do you think there ought to be specific secondary agricultural schools?—No, I do not think so at all, not secondary agricultural schools; but elementary work leading up to a course of secondary schools, yes. You would not get people to go to an agricultural school where nothing but agriculture is taught. I think it is better for a boy to have a general education up to a certain time, and then to specialise afterwards. If he has a taste for botany and chemistry that might be cultivated, and when he is 17 or 18 hand him over to the Cambridge authorities and let them specialise with him.

246. You are quite satisfied that secondary education should be left to the Board of Education to deal with on general lines and that the Board of Agriculture should not entertain the establishment of any secondary agricultural schools?—That is my opinion.

247. I understand that you are now proposing to have an experimental farm in Norfolk?—We are only proposing it. We have done nothing at present.

248. But you personally wish to have a farm of a similar nature to the farm which the University of Cambridge at present has, and where the same, or perhaps a different series of experiments would be carried out?—Certainly.

249. That would become then a County experimental station?—Yes, under the direction of the Professor of Agriculture of Cambridge, who would probably duplicate the experiments that had been carried out at Cambridge or extend them.

250. And vary them according to the investigations you were seeking?—Yes. Of course certain experiments might go on for years. The seasons have to be taken into account and it might take a long time to arrive at a definite result.

251. In your opinion a farm of the kind would be useful?—It would.

252. (By Lord Barnard.) You are engaged in actual farming yourself now?—Yes.

253. And I daresay have been for a long time?—Yes, for 34 years.

254. You have told the Committee that you have a

high opinion of the research work which has been done at Cambridge?—The highest opinion of it.

255. You have also told us that you consider there is great advantage and benefit from that kind of work?—Yes, and especially with regard to these new wheats; we shall, I am sure, derive great benefit from them—and barleys also.

256. So that the work has been of the greatest possible benefit to farmers, even although they never attend a lecture or go to a class at all?—Yes, it is of great national benefit I am sure.

257. I am not familiar with the Eastern counties. What is the system of general education of farmers' sons? Do they generally commence by going to elementary schools?—No, not farmers' sons. The ordinary farmer's son goes to a grammar school, the fees of which range from £40 to £80 a year. I am Governor of the Grammar School of North Walsham, where you get a good general education for £40 a year, including board and lodging.

258. With regard to classes for labourers, would it be your opinion, even if the Board of Agriculture thought it advisable to provide instruction for agricultural labourers, that it should be entirely distinct from the higher scientific instruction?—Yes. You see, as a rule, a labourer leaves school probably when he is 13, and then goes to work, and he does not usually go to night school afterwards. Some do, but most do not, and he usually can only read and write with difficulty. It would be like sending a sledge-hammer to crack a nut to send a man like Mr. Wood to lecture to a class of that sort. The average schoolmaster who has learnt a little science could teach them some elementary chemistry which would be useful to them. I think you would find the best way to get at them would be to offer them prizes for stacking and thatching and ploughing, and that sort of thing. I think they would like that better.

259. To go back again to the matter of research work, I suppose your opinion is that of a great many other experienced farmers in your district?—I think I might say so. You should have seen the party that went up from Norfolk last year, about 60 or 70, and the interest they took in the breeding of animals and the cereal experiments—it is talked about now. I write a column every week for our weekly newspaper, and it was most valuable at the time for me, and, in fact, it has often provided me with material since. Farmers take great interest in it, and they write to me asking "Can you tell me what to do with so and so?" "Is such a manure valuable for this crop?" I get two or three letters a week of that kind, simply because they know I keep myself in touch with Cambridge. They come to me, perhaps, where they would not care to go to Mr. Wood, thinking that their questions might not be very wise ones sometimes.

260. (By Mr. Staveley Hill.) You were speaking of the practical teaching in schools. In Norfolk are there agricultural gardens attached to many of the schools?—Not to many, but to several.

261. Do the teachers at those schools give instruction to the pupils in agriculture?—Yes, but it is not general. For myself, I should like to see a garden and a menagerie attached to every school.

262. That might involve a large increase of grant?—Yes. We have a map like that one on the wall there hanging up in our Education Committee room at Norwich, and we hope to fill our divisions up with schools. We are proposing to endeavour to subsidise the schools, so that we hope to cover the county of Norfolk with schools where boys can be educated as day boys for six guineas a year, and as boarders from 30 to 40 guineas, and we are getting on pretty well with that scheme. Those will be the boys who will go to Cambridge, and you will find a great many more going up when these schools get well established.

263. Do you give, or encourage the giving of lectures on Saturdays throughout the year?—We have done it in the past but not recently—they have been merely lectures to schoolmasters. We have discussions in our Chamber of Agriculture, and if there is anything particular affecting the farmers at the moment we have no trouble in getting the best men to come down and read a paper to us on the subject, and then we have a discussion about it afterwards.

264. Do you not have some classes at Norwich which

Mr. B. B.
Sapwell.

30 Apl., 1907.

are conducted by the Cambridge University?—On agriculture?

265. Yes?—No, not now. We have had for teachers, but that has been given up at the present time.

266. (By Dr. Somerville.) You have not told the Committee how you would provide for the rank and file of farmers' sons as regards their technical education. You hope that a large proportion of them will go to Cambridge, but I suppose even that comparatively large proportion would leave unaffected by far the larger number of the young farmers?—If I said a large proportion it was a slip of the tongue; if we got two or three from every school it would be a good result.

267. Do you suggest that the technical education of the rest of the young farmers should be left unprovided for?—Of course, the farmer's son, as a rule, leaves school when he is 15 or 16, and up to that time my opinion is he should have just the same education as any other boy, except that if he had a taste for it, and his father wanted him to he might give some of his time to botany and chemistry, but we should not begin to label him as an agricultural student until he had left school.

268. When these young men leave school you would like to see a considerable number of them go to the department of Cambridge?—I should.

269. But that might not mean more than five to ten per cent. of the whole of the youthful population of the county?—I should like to see as large a proportion as that, but I do not expect to do so.

270. But that would mean that about 90 per cent. of the remainder would be left unaffected?—They would go on as they do now by looking round and seeing what others in a district who are better informed do. If you have one man who has had a thorough course and he settles down in a district, he does a great amount of good to the other men around him who never have been to Cambridge and who, perhaps, would not have been clever enough to derive benefit from it if they had gone there, and who do derive great benefit from seeing the actual work that this man himself is doing.

271. I quite agree with you. You do not think it would be at all desirable to add something in the nature of an agricultural side in grammar schools that boys might resort to during their last year or so?—No; they are not old enough.

272. I suppose you would agree that in many cases financial circumstances would be an impossible barrier to a farmer sending all or the larger number of his sons to Cambridge, and yet he might be glad to send them to some institution which was more accessible and where education might be obtained at a lower rate?—Yes; but he can go to Cambridge for nothing at the present moment. We are prepared to pay £50 a year to anybody that has got sufficient intelligence to derive benefit from it. He has to be there for twenty-four weeks, and we know that for that sum he can live at Cambridge for twenty-four weeks, and the only bargain is that he shall stop at a farm and do practical work for the other twenty-eight weeks in the year. I do not know what better we could do than that.

273. I did not know that you could offer that to anyone?—Of course we can, until the demand is so great that the funds will not permit of it; but at present we offer to any farmer's son two years, extended to three if he is reported upon by the professor as being worthy of it.

274. I suppose it means really that you have not more than three or four of these students?—That is so. Of course if they came in numbers we should have to have competition, and give it to the best man as a scholarship.

275. Can you give the Committee any idea of the cost of running this county demonstration station that you have in mind?—No; I cannot tell you the cost, but what I have got in my own mind is this, that I do not see why we should not run it for between £500 and £1,000 a year. That is what I have got in my own mind, but this is quite in *nubibus* at present; it has only been discussed during the last two or three months.

276. I do not want to tie you down to anything, but do you think to run this county demonstration farm at a cost of £500 to £1,000 a year would be a good use to which to put county funds?—I should like to see one run in every county in England. It would be admirable from every point of view.

277. You think it would be advisable for farmers to

see demonstrations in their own districts and on soil with which they were acquainted, and that the results obtained there would receive more attention than those, for instance, at Cambridge?—Not quite that; they would look to Cambridge as being the centre of their special knowledge, and to this as a sort of feeder to Cambridge, where results would be duplicated and extended. A question, for instance, might be submitted to the professor at Cambridge, and he might say, "We will give it to the farm to answer," and we would deal with it at the farm and work it out.

278. Have you been to the experimental station in the adjoining county of Suffolk?—No.

279. (By Mr. Acland.) In your desire to have a supplemental experimental station, are you influenced by the idea that farmers are more likely to go to their own places if they have them in the county or by the idea that these stations should be multiplied?—I have had an experience myself of over 30 years, and I think the station would be of the utmost benefit. A landowner recently said to me that he would like to see in Norfolk an agricultural bureau, with somebody there who was capable of answering questions on any practical subject, and I put it to him that you could not get a man whose opinion would be valuable to take charge of it, because, first of all, a man whose opinion would be valuable would be so very expensive; and again, that a good man like that does not always consider money only, and would not care to lead a semi-idle life; but if you have a station like this no one man need come forward, because you have half-a-dozen experts at Cambridge, to whom the farm manager could forward questions, and you would practically get an answer on any subject. That is how it arose; and the idea of an agricultural bureau was put on one side, and the experimental farm was suggested in the place of it.

280. You regard it as important in your own county?—Yes. I do not think you would get the Norfolk people to find the money for it except in their own county.

281. You experience difficulty in getting farmers to go outside their own county, even as far as Cambridge, to see what is being done, do you not?—I think so.

282. You think it would be more extensively used if you had a station in your own county?—Yes.

283. Do you think a system of short courses where you paid the railway fares of the students to attend them would be beneficial?—I doubt whether you would get the right people to go to them. Some would say they were engaged in practical work and others would say it was too far.

284. You doubt whether the short course idea would attract?—I think the money would be much better spent on an experimental station.

285. (By Mr. Davies.) I think you said scholarships were granted not as the result of any examination at all?—Not of any competitive examination; but we do examine them, as I say, to see if they are sufficiently intelligent to derive benefit from the course.

286. Anyone who wishes to go has to apply to the Education Committee, I suppose?—Yes.

287. I think you also said that the farmers in your county realise the great benefits which their sons would derive at Cambridge if they went up and went through the course. Is that so?—Yes, but I am afraid we do not get as many students as we would like.

288. So that in that sense it is not as popular as it might be?—Some farmers have not too much money, and our main object is to help the sons of those farmers who have not very much money. Of course it has been said that Cambridge is a place where young men might get grand ideas and that sort of thing, and we want to expel that belief. As a matter of fact, we have no fault to find with the treatment the men get there—snubbing or anything of that sort. I believe they say they are perfectly satisfied with the treatment they get.

289. You think the farmers who could afford to send their sons to Cambridge would prefer to do so?—I do; but farming is so bad that many men who can afford to send their sons to Cambridge prefer to send them into the professions, and those are mostly men who would make admirable farmers, but who make indifferent professional men. The farmers, however, say that they can put their sons into a profession for

£1,000, whereas if they want to put them into agriculture it costs them £3,000 and, therefore, they prefer the professions.

290. If you knew a man could afford to pay you would not send his son up to Cambridge?—No; it is only those people who we know, or think, cannot afford the £65.

291. I think you said that farmers appreciated very much the results of the experiments made at Cambridge?—They do.

292. Do you diffuse the results of the experiments amongst them?—I forget how many members there are of the Chamber of Agriculture, but there are probably 500 or more and every one of them has one of these books of Mr. Wood's which gives an account of all the work which is being done, and they discuss them in the Chamber and in the local papers, and I think the results of the Cambridge experiments are really known to all the farmers.

293. How do you get at farmers who do not take an interest in agricultural education, and who do not join your Chamber of Agriculture?—The Chambers of Agriculture have discussions about the experiments, and the local papers have articles on them; and you may depend upon it that the majority of the Norfolk farmers know about all that is being done.

294. (*By Mr. Medd.*) Do I understand your Committee consult the Board of Agriculture at all when formulating the scheme of instruction each year for the county?—No.

295. Would your Committee have any objection to submitting a scheme annually to the Board of Agriculture for advice and suggestions?—I think, if they get more money for the purpose they would; but I do not see how they can do it otherwise.

296. The Board of Agriculture is in possession of a great deal of useful knowledge, and have experience of many subjects, and I suppose your Committee would not object to receiving advice and suggestions from the Board?—I see what you mean. I am sure they would not; and I think the only reason they have not applied to the Board is because they did not know the Board would give advice. They have always gone to the Professors at Cambridge for the results of experiments, and, after consulting them, we have acted upon their advice; but, if the Board of Agriculture have more knowledge on any subject than the people at Cambridge, we should have no objection to consulting them.

297. (*By Mr. Latham.*) You have led us to suppose that it is about 3 per cent. that you get to go to Cambridge?—I should not like to bind myself. I do not think I said 3 per cent. I think somebody suggested 5 per cent. or 10 per cent. I could not give the percentage.

298. Can you tell me what proportion of your farmers' sons go to Cambridge, without going up through the County Council?—I could not say; I have no means of getting any knowledge with regard to that.

299. I suppose it is very, very small?—No, I think there are several. I know several young farmers in my neighbourhood who have been to Cambridge.

300. Do you consider in your county that the farming is done much better by those men who go to Cambridge than by practical men?—You see they do not go up to Cambridge merely for farming; they may be going for the professions. For instance, I sent my two sons to Cambridge, but not for farming; one is a barrister, and another is a doctor. I mention that because that is a case within my knowledge of a farmer sending his sons to Cambridge without any reference to agriculture at all.

301. That was the next question I was going to ask you?—I do not think there is a living at present in agriculture, and therefore I put my sons to what I thought they were better suited for.

302. Do you not think that applies in the case of other sensible men also, that they do not put their sons into agriculture?—Quite so; but I was referring to a different thing from a farmer sending his son to Cambridge from the farming point of view. A man may have a certain amount of means and he likes to send his son to a university, and he does so. Another man, however, may not have the means, and his son may be an intelligent lad, and he wants to send him up, and he can avail himself of our offer if he chooses. Of

course, I should not in my position dream of availing myself of the advantage that we offer, but there are other men who would be forced into accepting it.

303. What other men besides farmers' sons do you know of who have availed themselves of your offer?—There is one man, a gardener's son—I forget his name—a young man who is interested in agriculture, who went as a clerk in a manure works. He did not like that work and left it, and finding he had ability we gave him a scholarship, and he is turning out marvellously well. There was another one—I forget his name also—that we sent up who is doing exceedingly well; and the Cambridge authorities are very pleased indeed with them.

304. Will they go back to the land when they have finished their course?—I suppose those men in particular will go in more for agricultural teaching. One of those men now is a fellow of the Institute of Chemistry.

305. Can you give us any idea of the number of men who have gone through these degrees and diplomas, and have gone back to actual farming?—There is a Mr. Sherringham, who got his £65 scholarship. Sir Horace Plunkett got him a lectureship in Ireland, but the country did not suit his wife, and he had to leave there, and he went back to farming and settled in our district. He is a first-rate farmer, and he is the centre of agricultural learning all round, and will be for years to come. People watch what he is doing; they know he has been to Cambridge; and he will do good to perhaps 50 or 100 men who have not been to Cambridge, and would not think of going there.

306. You think the Cambridge man makes money faster than the practical man?—The best scientific man is no good as a farmer without practical knowledge, we all know that very well; but a practical man with science is better than a practical man without. We insist in our scholarship on 28 weeks of practical work, and I think we are turning out some useful men.

307. I was rather sorry to hear your remark about the labourers. I do not pretend that you can expect to educate the older men now; but could you not educate the younger men?—How many in a neighbourhood would there be; and again, as I said before, if they are good enough we would give them a scholarship.

308. They would not be good enough for that, I am afraid?—Well, what could you teach them? They get the practical work on the farm, and it would not be the slightest use sending a man like Mr. Wood from Cambridge down to give them a lecture; but we give them night schools, and we teach science in the night schools, and in the winter if they like to avail themselves of it; that is very valuable work for the labourers.

309. Would not a great many of the labourers and farm bailiffs and that kind of man be improved by a little scientific work?—We are prepared to give them that in the night schools. In the winter they can go to evening classes, and have one of the schoolmasters who has been taught science at Cambridge, and he would be able to teach them that.

310. Do you find the night schools are taken much advantage of?—No; I cannot say that I do.

311. Then the difficulty is that they are not taught?—No; but would you have a first-rate lecturer come down to give them a lecture that they would not understand?

312. No; but in my experience this better-class young man will go to lectures?—You see the place is not populated enough for lectures.

313. (*By Lord Barnard.*) Am I quite correct in understanding that your desire for an experimental farm is not exclusively that you may have a county farm, but that you may have a farm in connection with the work that is carried on at Cambridge, and the extension of that work in consequence of the insufficiency of the existing centre?—That is exactly what we feel. The work at Cambridge is so valuable that we want to extend it, and that is how we think it could best be done.

314. With regard to these bursaries that you give, am I to understand the object that you have in view is to enable a man, whether he is engaged in farming or not, who is desirous of, and who is capable of taking up agriculture, and who could not otherwise afford it, to get the advantage of that special education at Cambridge?—That is so.

Mr. B. B. Sapwell.

30 Apl., 1907.

SECOND DAY.

Wednesday, 1st May, 1907.

PRESENT :

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

The Lord BELPER.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. THOMAS CARRICK called and examined.

Mr.
T. Carrick
1 May, 1907.

315. (*By the Chairman.*) You are an Alderman of the Northumberland County Council?—I am.

316. And a Member of the Council and Agricultural Committee of the Armstrong College, at Newcastle-upon-Tyne, which is connected with the University of Durham?—That is so.

317. When was your agricultural department founded?—1895.

318. I have here 1892.—Yes, that would be the date of the founding of the agricultural department; I was thinking of the Cockle Park Experimental Farm, which was founded in 1895.

319. Would you describe the agricultural department of the college?—It is a department that takes up the question of scientific agriculture and teaches it. It has a professor of agriculture—there is a chair for that—and it deals with matters that appertain to agriculture throughout the North of England. They have experimental plots and stations that they control. It is governed by a committee of gentlemen who are interested in agriculture.

320. How are the gentlemen who form the committee appointed?—I think the Council of the college appoint them, but they are recommended by local agricultural societies or institutions like the farmers' clubs.

321. Does the college receive support from other counties besides the county of Durham?—Yes; it is connected also with the counties of Northumberland, Cumberland, and Westmorland.

322. A large number of agricultural students have passed through the college, have they not?—Yes; a good number.

323. An ever-increasing number?—Yes; they are increasing.

324. What becomes of the students who have been at the college?—There are more than 100 of them, I should think, who are in the counties farming their own land or their fathers' land, and there are several who hold appointments as experts in agriculture, and important positions in different parts of Europe.

325. They are trained as teachers, some of them?—Some of them are teachers.

326. The college is popular among the farmers?—It is getting more popular. In its early stages there was a prejudice against the teaching of scientific agriculture, but now I think that is being broken down, and the younger farmers particularly are appreciating the work of the college much more than they used to.

327. Are any fees charged to students?—For some of them there are fees, but there are others who are sent up by the County Councils by exhibitions.

328. As scholars?—As scholars.

329. What amount of preparation do the pupils receive before they join the college?—I cannot quite answer to what extent they are carried in the schools before they join the college, but they have to pass a certain standard of examination at the elementary schools.

330. Do they pass direct from the elementary schools to the college?—Many of them do. Some of them go into secondary schools, but several of them go from the elementary schools.

331. Is the supply of secondary schools sufficient?—No, it is not.

332. You think it ought to be supplemented?—Yes, by all means; it is very necessary.

333. Is it your opinion that secondary schools ought to be instituted specially for farmers?—No, I would not say specially for farmers; I should say for all classes.

334. You are satisfied with general secondary education?—General secondary education to take them a step above the elementary standard.

335. Can you tell the Committee what are the sources of income of the college?—For the general income of the college or for the agricultural department alone?

336. For the agricultural department of the college?—It depends almost entirely on the grant from the Treasury; there are a few subscriptions, not many.

337. You get grants from the County Councils?—Yes; we get County Council grants, of course. The County Council of Northumberland subscribe £500 a year; the County Council of Durham £500 a year to the chair; and the County Council of Cumberland £70 a year.

338. I suppose you want additional grants?—Very much so; they are very much needed, as the work is increasing.

339. Are practical experiments carried out in connection with the teaching of the agricultural department of the college?—Yes; we have a large experimental farm in Northumberland of 400 acres which the college supervises, and we have other plots of land in Durham and in Northumberland that are controlled by the college authority for experimental and research purposes.

340. Is the farm leased by the college?—No; the County Council of Northumberland are the tenants that lease it.

341. It is, therefore, under their immediate control?—Yes, it is; they are responsible for it, but out of the £500 grant given to the college.

342. They give the college authorities assistance in managing and directing it?—Yes.

343. Are those experiments watched by the farmers?—They are so now; but at first, as I say, they were rather prejudiced against them, but every year they are becoming more important, and the farmers are coming in large numbers to see the field experiments and to take notes, and I have no hesitation in saying that the farm is doing a vast amount of good in the neighbourhood.

344. Are any lecturers sent out by the college?—There were in the early stages a good many lecturers sent out, but I do not think they were the success that was expected, and there are not so many now; there are a few, but not so many.

345. To what do you attribute the want of success of the lectures?—The great difficulty was to get a practical man to deliver lectures; you got a scientific man probably who did not know much about practical farming, and the farmers did not have the same confidence in what he said; but we have had some lectures which have been very successful, and have commanded very good audiences of farmers.

346. Your opinion is that the staff of professors at the college and the staff of lecturers should be different—that different qualifications are required in a lecturer who is sent out to educate the farmers and to elicit their interest in education and in a staff concerned with teaching in a college?—I would not say that, because I think it is possible to get an intelligent lecturer and scientific man who may yet have practical knowledge, and the Agricultural Committee endeavour in making a selection to get a man who possesses those two qualities.

347. You would therefore lay stress on the fact that the lecturers should be practical men?—Yes, they must have been at practical work on a farm before they come and lecture to farmers. We are very strong on that point.

348. Can you give the Committee any information about the staff of the agricultural department? Of what does that consist?—Of course there is the professor of agriculture in the chair, and there is one lecturer who goes out to lecture occasionally under the direction of the professor, and I think there is the botanical, that comes under the staff of the agricultural department.

349. (*By Lord Barnard.*) Perhaps Professor Gilchrist will be able to give us that particular information in more detail?—Yes.

350. (*By the Chairman.*) Very well; I will leave that point. Are you satisfied with the way in which the money which you receive is used? Do you think, for instance, that the grant given by the Board of Agriculture and the grants given by the County Councils you have mentioned should be given for specific purposes—that they should be differentiated?—I think so; I think they ought to be given particularly towards agricultural education.

351. What I want to know is, whether, for instance, you would wish the grant of the Board of Agriculture to be given to the staff for the purposes of salaries, and then the grants of the County Councils for other purposes?—I think if the grant was given to the general fund, as at present, it would be the best way.

352. You would rather that the money was given without any definite purpose, and that the authorities of the agricultural department should be allowed to use it for whatever purposes they wish?—I think so. I think that would be the best way.

353. Have you adequate buildings for the purpose of this instruction?—No, we have not; we have a room in the college, but no separate building.

354. Therefore you are an absolutely integral part of the college?—Yes, we are one department inside the college.

355. Do the students, besides attending lectures at the agricultural department, also attend the general lectures given in the scientific department of the college?—I think they have an opportunity of doing so, but I do not know whether they do it regularly. I do not know whether their time is fully taken up, but they have the opportunity of attending lectures in the other departments.

356. Are the students who attend the institution chiefly sons of farmers?—Chiefly sons of farmers, or youths who are intended to become land agents or something connected with agriculture.

357. Is a record kept of what becomes of the students after they have left the college?—I am not aware of a record being kept, but we pretty well know what many of them are doing who have left the college.

358. What is the work conducted by the college which in your opinion is of the most value to the farmers in the district?—The work of research, I think, is the most valuable: experimental work, in trying to find out which is the best and cheapest way to grow crops.

359. To that you would give further development?—That might be developed with great advantage.

360. Are experiments made in breeding plants? Have you got anything in that direction?—In connection with the college there is a small plot of ground which, I think, is devoted to that purpose.

361. Is anything done with regard to forestry?—Yes, forestry has been much taken up of recent years; we have a large plot of ground for that purpose.

362. You have in the neighbourhood the opportunity of experimenting in forestry?—Yes, we have a very good opportunity now.

363. I suppose stock breeding, too, is conducted at the farm?—Yes, we breed stock at the farm, but only to a limited extent, not largely.

364. Do you know if attention is paid to dairying?—In Durham there is some experimental work carried on at Offerton Farm for testing the best kind of food to produce milk in dairy cows, and that has been of great value to the neighbouring farmers, who have been taking note of it.

365. Sheep breeding, I suppose, has also been carried on at the farm?—Yes.

366. (*By Lord Barnard.*) I think you are a Northumbrian?—I am.

367. You know the agricultural classes in the county of Northumberland pretty well?—Yes.

368. Personally, your business is that of the dairy and milk trade, and, I believe, in a very large way?—Yes, I am chairman of a limited company that has two very large creameries; one in Northumberland and one in Cumberland.

369. The population on both sides of the River Tyne is very large?—Yes, in the immediate vicinity of Newcastle it is very large.

370. The consequence is, there is a very great demand for milk?—A very great and a growing demand.

371. Therefore the milk trade is of the utmost importance for the welfare of the people as well as of the agriculturists?—Yes, it is very important.

372. The Northumberland County Council rent from the Duke of Portland, do they not, an experimental farm?—They do.

373. You are the chairman of that farm committee?—Yes.

374. The Northumberland County Council transfer the management of that experimental farm to the agricultural department of the college?—That is so.

375. You have a farm bailiff there who is a practical farmer?—Yes.

376. Your committee has meetings at the farm monthly?—Yes.

377. A very elaborate record is kept of all the experiments that are carried out?—Yes; it is very elaborately kept.

378. That record is widely distributed to the farmers?—Yes, and at great expense.

379. That is the work that the county of Northumberland contributes. The county of Durham has for a long time—although you do not perhaps know so much about Durham, I daresay you do know this—had under consideration a suggestion of obtaining a similar farm especially for dairy purposes?—Yes.

380. They have not been successful?—No.

381. In lieu of that they established the Offerton Dairy Research Station to which you have alluded?—Yes.

382. Farmers take a great interest in the dairy experiments?—They do.

383. Do you frequently go to Offerton?—I do not go myself, but I have all the records of the experimental work that is done there, and I take a great interest in it.

384. You can safely say, from what you know, that the work done there has been of great benefit to the farmers?—Yes; I can say that.

385. From your acquaintance with farmers in Northumberland you think they are beginning to take an increasing interest in the work done by the college?—I am sure that the new generation of farmers are taking much more interest in it.

386. Do you attend the local lectures yourself?—Yes, I have been to several.

*Mr.
T. Carrick.
1 May, 1907.*

Mr.
T. Carrick.
1 May, 1907.

387. From personal knowledge do you know that they are attended by farmers?—I may say there are more others that attend them than farmers perhaps. There are not so many farmers' sons there as we should like. At first there was a great prejudice against the lectures, but the lecturer that we have now who has just left the college is very popular and I think he has commanded a good many more farmers than his predecessors did. It depends very much upon the lecturer. If he has a practical knowledge of the subject he is talking about, the farmers' sons will come, but if he has not been a farmer and does not know very much about farming in its practical character they will not trouble to attend.

388. I think you know that the committee which governs the agricultural department of the college almost always in selecting their staff do *ceteris paribus* appoint men who have been brought up on farms and have a practical acquaintance with farming?—That is so.

389. That is the object the committee always aims at?—Yes, there is no doubt about that.

390. Do farmers in Northumberland usually send their sons to the elementary schools?—I think a large majority of them do. They have not the opportunity of doing anything else, many of them: there are so few secondary schools within easy distance.

391. Are the County Council of Northumberland considering the proposition of establishing more secondary schools?—Yes, we are; we need them very much.

392. The County Council of Northumberland are, I believe, afraid of any very large increase of rates, are they not?—Yes, they are very strongly opposed to that.

393. They have been more especially so than others, I believe; in fact, the assistance that they extend to you is somewhat precarious. Do you think they will continue to give the grant they are now giving to the college?—I am sorry to say it is rather precarious, in consequence of the increased cost of the County Council; and there has been a threat to reduce those grants. I should be very sorry if that ever took place.

394. As a person engaged in the milk trade, you have told us that you think the education given in a college such as this is of value to that trade; and I suppose you would admit it is of value to other businesses and trades also, such as millers, maltsters, land agents, seedsmen, and so on?—Yes, I think it is decidedly valuable.

395. (By Lord Belper.) I do not quite understand what the system is under which the other counties join you. Do they contribute only to the farm, or do they contribute to the college as well?—They contribute to the agricultural department of the college.

396. You say the college is managed by Northumberland?—The £500 that is given by Northumberland was given when the agricultural chair was established.

397. To establish the agricultural chair?—To establish the agricultural chair.

398. What do Durham and Cumberland contribute towards that?—Cumberland did not contribute anything at that time, but they have since given a contribution.

399. Would you explain to me what the system is now between the three counties?—Northumberland gives a contribution of £500, and the Council of Durham gives an equal contribution of £500—that was to establish the chair of agriculture. Cumberland and Westmorland, at that time, did not come in, but since that time they have given a contribution to the agricultural department along with the other two counties.

400. Is that managed by a governing body?—It is managed by the same body.

401. Are the other counties represented on the governing body?—Yes, on the agricultural department they are.

402. Had you any difficulty in settling the agreement between the counties? Some counties say there is a technical difficulty at present, owing to their having no power in their Act to form a joint governing body for the purpose of carrying on education of that sort. Have you had any difficulty in that respect?—We have not had any in the past that I remember.

403. Does one of the counties for all practical

purposes have the financial control—does it go through one body's hands, or is the whole county the governing power?—The agricultural committee of the college control the expenditure of the funds.

404. (Lord Barnard.) Perhaps I can explain that. I ought not to give evidence, but the agricultural department is not under the county at all; it is under the college. The college appoints representatives of all the counties which give contributions. The county of Durham sends so many members, the county of Northumberland so many, and Cumberland so many; but probably Professor Gilchrist can give all information about that.

405. (By Lord Belper.) Is the chemical department in connection with the agricultural department, or in connection with the college itself?—The County Council really is the direct tenant of the farm, but it is worked through the college.

406. You carry on all sorts of analyses and things of that kind in your chemical department—analyses of the soils and so on?—Yes.

407. Experimental work generally?—Yes; largely experimental work—in fact entirely.

408. You said also that you had a department of forestry?—Yes; a large department now.

409. Does the Government give any contribution towards that?—Yes; through the instrumentality of Lord Barnard, who succeeded in getting a very important contribution—£250—which is the largest contribution from any single source.

410. With regard to the question asked you about whether it was desirable to give a grant for some specific purpose which we understood afterwards meant according to the salaries that were given to the officials in the college or generally for the purpose of keeping up the agricultural department, I think you were not in favour of any alteration?—No; I prefer that it should be given to the department and allow them to distribute it.

411. It might be difficult to assess a grant fairly if you gave it merely on the ground of the salaries that were being paid might not it?—I think there would be a difficulty.

412. It would be an encouragement to institutions to give extravagant salaries in order to get a larger grant from the Government?—The college committee would have to give a sufficient salary in order to get capable men for the department; it is very important that we should have capable men.

413. Yes; but if the institution was to benefit in the way of grant by giving larger salaries that might induce them in some cases to give larger salaries than were necessary?—I do not think so.

414. You do not think if you can put £200 into your pocket by giving £100 to somebody else that that would not very likely be the effect of the transaction?—I do not think it would have that effect.

415. Why?—A committee of sensible gentlemen would not begin to give money away just because they had it to give.

416. If they obtained more by giving it away and they were short of money might not it be so?—Perhaps they would be able to command a higher class of staff then.

417. I am taking it for granted that they would get properly scientific people, but if the grant that they got from the Government was given solely on the amount that they gave away in salaries might not it have the effect of making them a little liberal with their money in giving their salaries in order to get a larger amount for their institution?—I think it might have the effect of developing the work in the various directions in which it needs developing without increasing the salaries.

418. Then you are in favour of giving the grant according to the salaries paid, are you?—I am rather in favour of giving a grant to the committee to expend it in the best manner.

That is what I thought, but I understood that you were now rather arguing in favour of giving a grant based according to the salaries paid, and that was the question that I thought was asked you.

419. (By the Chairman.) I may perhaps explain. The point is this; you have two colleges, we will say, one with an efficient and complete staff, and the other with a less efficient and less complete staff. In

Mr.
T. Carrick.

1 May, 1907.

that case it is obvious that the college which has an inadequate staff would desire to see its grant increased to the same level as the other college in order to bring its staff to the proper standard.—That is so.

420. It is not a question of giving it according to salaries, for, of course, no Government Department would encourage any institution to give salaries above a proper standard. But the point is that in the distribution of the grants by the department it is obvious that it would be to the advantage of the college to receive a grant in accordance with the efficiency and the completeness of its staff.—I should say it is very desirable that there should be a very efficient staff all round.

421. (*By Lord Belper.*) I think anybody would agree that it is desirable to give a grant according to the efficiency of the college; but the question is, if you take the amount of the salaries paid as the basis of the grant, might not that have the effect of giving a larger grant solely on the ground of the salaries that were given?—If the salaries were low, that, I think, would not be fair.

422. That, of course, is another point. They might get a staff at a lower salary in one part of the country than in another.—I might say that we have felt very much that we have been underpaying our agricultural staff at the college, especially the professor of agriculture. He has been underpaid for years and has worked very hard, and the committee have felt very keenly indeed that it was a great pity he should have such a poor salary.

423. I suppose everybody would agree that it is absolutely essential, for such institutions, that you should have the most efficient staff you can possibly get?—Certainly.

424. The only point I want to make is, as to whether the mere standard of salaries, being taken as the basis of the grant, would tend to encourage the increasing of the salaries of the staff. I was putting to you, would not other considerations come in, in order to prove whether the staff was efficient or whether it was not?—Yes, that is so, but I think it depends upon the level on which you have paid your staff up to the present time.

425. I do not want to suggest anything with regard to how it is done at the present time. I only mean that in trying to get at the efficiency of the staff, there may be other considerations besides the actual salaries they receive?—There are other ways of extending it.

426. Yes, in fact there must be other ways of extending it?—Yes.

427. (*By Lord Moreton.*) There is one point I did not quite understand as regards the dairying. You mentioned the Offerton Dairy Experimental Station?—Yes.

428. What facilities do the students have for learning dairying at the college?—We have none at the college at present unfortunately.

429. There is one other question I should like to ask, which, perhaps, it would be better for me to put to Professor Gilchrist, when he comes. It is this: what does it cost a student to come to your college. Take a farmer's son coming up for a long course—I see you have two courses, a long and a short course?—Yes.

430. Can you give us an idea what it would cost a farmer's son to come up for a long course, and for a short course?—I think, perhaps, Professor Gilchrist could answer that question better than I.

431. (*By Mr. Staveley-Hill.*) Are any lectures given for the teachers in your elementary schools?—No, I do not think any teachers have instruction. On the summer afternoons at one time they had the opportunity of attending lectures.

432. As a general rule they do not do it?—No.

433. Do many farmers in the district apply to the college for advice?—They go to the professor. I think he has a very large number of letters asking for advice.

434. Is that an increasing number?—It is an increasing number. Farmers get the bulletins of our work that is carried on at the farm, and they very often write to the professor for information. I think it is most valuable to farmers.

435. Do you charge any fee for that information?—None at all.

436. What is the proportion of time given by the students to practical work as distinguished from

scientific teaching?—There is no practical work at the college.

437. Not out on the farm?—The students are only occasionally taken to the farm; they do not do any work there.

438. Are these pupils acquainted with agriculture or are they entirely ignorant of it when they come?—The six weeks' course students are farmers' sons who have mostly a good knowledge of agriculture.

439. What do you say with regard to the long course?—Some of them know something about it, but most of them do not have much knowledge of farming.

440. (*By Prof. Middleton.*) You said that some of your students came from primary schools—you mean, of course, the short-course students?—Yes, chiefly short-course students.

441. Then you referred to the fact that county lectures have recently become much more popular in the county of Northumberland than they previously were?—There have not been a great many of them, but those that were held have been more fully attended than they were previously.

442. You speak principally for Northumberland—you are not personally concerned with the county of Durham, are you?—No, only from what I have heard.

443. You know that the county of Northumberland tried lectures in the early days, and it then decided that it would give attention to experimental work on the Cockle Park Farm until it had accumulated certain experimental evidence, and it was part of the policy of the college not to offer lectures in the county of Northumberland for a certain number of years until that evidence was collected?—They were not given to any great extent.

444. During the whole of that time lectures were given in the county of Durham?—I believe they have been for some years.

445. You cannot say, except from hearsay, whether those lectures in the county of Durham were successful or not?—I cannot speak of that.

446. You refer to Northumberland principally?—Northumberland I know, and Cumberland.

447. Your experience among farmers is this; that the work that has appealed to farmers most and that has taught them most has been the experimental work?—Undoubtedly—things that they can see for themselves such as the crops growing, and so on, are most attractive to them.

448. (*By Dr. Somerville.*) You and I have been associated in this work for a great number of years, I think?—We have.

449. May I ask you what is being done in the county of Northumberland now to provide for the requirements of what I may call the rank and file of young farmers?—There is nothing being done more than the experimental work we are carrying out on the farm and occasional lectures and facilities given for the six weeks' course at the college for young men.

450. You have not started in Northumberland a system of local centres for the lower and less advanced forms of agricultural education?—No, I am not aware that any has been started yet.

451. There was a proposal, was there not, to establish secondary schools with agricultural sides at such centres as Morpeth, Hexham, and Alnwick. Has that not been proceeded with?—No, nothing has been done yet. Of course these secondary schools are going to be erected, and very probably there may be agricultural sides to them, but not much advance has been made yet.

452. Do these young farmers that are sent from Northumberland to the college in Newcastle get the advantage of small county scholarships?—Yes.

453. Do you remember how many of these scholarships are annually awarded?—I am not quite sure. Professor Gilchrist may know the figures exactly, but we are trying to get more money than we have done for scholarships. We think it is a very good way of inducing the young farmers to go to college.

454. In your capacity as chairman of the Cockle Park Farm Committee, have you had conclusive evidence from practical farmers in Northumberland that they have been assisted in their business by the education

Mr.
T. Carrick.
—
1 May, 1907.

that has been supplied, and by the experimental results that have been forthcoming?—I have had several gentlemen who have given me proof that they have got great benefit by going to the farm and seeing the experimental work carried on there, and also by reading the reports of the farm. Those reports have been of great benefit to them; several practical farmers have told me that.

455. The farm is maintained, I think you said, entirely by the county of Northumberland, supplemented by an imperial contribution?—That is so.

456. What amount of financial assistance does the county of Northumberland now provide?—£600 a year.

457. A definite sum of £600 a year?—A definite sum of £600 a year.

458. That is supplemented by £200 a year from the Board of Agriculture?—Yes.

459. These contributions are over and above any profit, if we may call it so, that you obtain from the ordinary working of the farm?—We cannot make a profit from an experimental farm; we make a considerable loss, but we succeed in carrying on the work within the amount of the grant.

460. So that in point of fact it takes the most part of £800 a year to run the farm?—Practically, that has been the average cost of working.

461. The conclusion you have arrived at, supported by the evidence of practical men, is that the money is well spent?—Undoubtedly; it is very well spent.

462. A Committee of Enquiry, if I remember rightly, looked into the position and results of the farm in Northumberland, did they not?—Yes. They took a lot of evidence from large and small farmers and made a report to the County Council. I may say there was a small minority of the County Council that objected to this expenditure of £600 a year, so this enquiry was held and they reported to the County Council. It came before the County Council and was debated at length, and the vote in favour was carried by 40 against 10, who thought it was undesirable.

463. That result was arrived at after taking evidence, I suppose, both from those who were opposed to the idea of the county farm, and also from those who were in support of it?—Yes, they took both sides; the evidence was taken very carefully, I believe.

464. I think also in the county of Northumberland you give a considerable amount of attention, do you not, to horticulture?—Yes, that has been developed very largely recently, and that is a very useful education.

465. Do you find that horticultural instruction in the local centres is well supported?—It is better supported than it was. It is like other matters in agriculture; it was not at first so much supported, but now the local gardeners are taking great interest in it, and we have a very good man who comes and gives us lectures on fruit-culture and pruning and that kind of thing. It is very much appreciated now.

466. Do you think that horticulture affects a larger number through the agency of local instruction than would be the case, for instance, with agriculture?—Yes, it does.

467. The audiences are better?—You get a larger number of gardeners and cottage gardeners and others.

468. Are you convinced that this agency must have a considerable effect upon the prosperity of the minor cultivators?—I think it is most useful information, and it gives the young people an interest in gardening. In the village in which I live there are 18 plots; the elementary scholars each have a plot, and they are taught by the schoolmaster, who takes an interest in gardening; and when our County Council instructor comes up to give his demonstration they are always most eager to get information, and I am sure it is having a very good effect in our villages.

469. So that the form of organisation takes the lines of a county demonstrator, and of instruction in the elementary schools?—Yes, controlled by the Education Department.

470. That is, as regards the instruction in elementary schools?—Yes.

471. Does the instruction which is supplied come under the Education Department?—They pay a portion of the teacher's salary.

472. (By Mr. Medd.) Does your Committee consult the Board of Agriculture at all when formulating its annual scheme of education for the county?—No.

473. Would your Committee be prepared to submit a scheme to the Board of Agriculture for advice and suggestions?—I do not see why we should not submit a scheme for advice and suggestions, but the local committee would have more knowledge in initiating a scheme.

474. The advantage might be that the officials of the Board of Agriculture would be familiar with successful experiments in other counties, which they might explain; that is all. I should not suggest that the Board in London should exercise control over you, but merely bring their knowledge within your reach more directly?—I think that might be very useful and desirable.

475. I notice that your grant last year out of the "whisky money" for agriculture was £798 out of £7,456; was that amount larger or less than in previous years?—A little less.

476. Do you know why?—In consequence of the decreased grant to the county because of the whisky drinking.

477. Not, you think, from any disinclination to continue support for agricultural education?—No, I think not.

478. In answer to Lord Reay, you said you were satisfied with the general secondary education?—I think there is great need for more secondary schools.

479. You were speaking, of course, with a view to the preparation of students for the Armstrong College?—Yes, as a step from the elementary school to the college.

480. You want your students at the Armstrong College to have a thorough foundation in general education?—Certainly.

480A. Now, with reference to the small farmer and the labourer—what Professor Somerville called the rank and file. In Northumberland you have no permanent institution for intermediate agricultural education, have you?—No.

481. You only have these short courses?—That is so.

482. You have not yet, I take it, established any secondary school with an agricultural side?—None at all.

483. You are probably aware that the schools at Ashburton in Devonshire and Wellington in Somersetshire, with agricultural sides, failed?—I am not aware of that.

484. They did as a matter of fact. In Ashburton in Devonshire the school was conducted under the very best conditions, but it has proved impracticable. Have you had any experience of an intermediate agricultural school in any other country—have you seen one?—I have seen them on the Continent; I have seen them in France and I have seen them in Switzerland.

485. From what you saw of them in France, should you consider that a type of school adapted and suitable for the sons of small farmers who could attend from the age of 13 or 14 to the age of 17?—I think they are very suitable indeed.

486. It is merely a question of money and organisation?—Yes.

487. If it could be established it is probably the most effective way of attracting and improving the small farmer?—Undoubtedly, if you could have practical farming carried on along with it—experimental stations.

488. The absence of that grade of education is not for any want of belief in it, but for want of money?—That is so.

489. Do you do anything for the labourer himself in the continuation schools?—He has the opportunity in many parts of the county of attending evening classes; there are no continuation schools really that I know of.

490. You have not, of course, anything in the nature of a technical day school, have you?—No.

491. In your continuation schools you give no instruction in any agricultural processes?—No, not that I am aware of.

492. Have you ever tried a class in the management and construction and repair of farm machinery for instance?—No, not to my knowledge.

493. Such a class would be valuable, I should imagine?—Yes, perhaps it might be, but it has not been tried.

494. I dare say you have never heard, or you may not have had personal experience of what I may call boys' agricultural clubs?—No.

495. They only exist in the United States; you have never met with them?—No.

496. As an organisation distinct from a school but as a method of attracting and educating farm lads?—I do not know anything of them.

497. You do find difficulty in retaining control over or influencing in any way the farm lads after they leave the elementary school?—Unfortunately, we have not any system by which we can control them or assist them.

498. It is very largely a matter of money?—Undoubtedly.

499. Not from any disbelief in the value of it?—I think not; I think that there could be such centres established where it would be made attractive to these lads, and where they might be got hold of and made useful.

500. Do you come into contact at all with the official correspondents of the Board of Agriculture?—That is to say, the local correspondents?

Mr. Medd. Perhaps Mr. Middleton can tell me how many correspondents they have in Northumberland?

Professor Middleton. Probably four or five I should think.

501. (By Mr. Medd.) Do you know anything about them?—Yes; I know the gentlemen who correspond with the Board of Agriculture.

502. Do they act in any way as a conduit pipe between you in Northumberland and the Board?—No.

503. Have you ever formed any opinion as to the advisability of a permanent consultative committee being formed in London which should consist of representatives from each county, and meet periodically to discuss matters of agriculture and agricultural education?—I think that would be very desirable.

504. You have, I believe, several successful co-operative societies in Northumberland?—Yes.

505. How do you find co-operation works; does it in any way stimulate a demand for education?—I have not seen any marked effect.

506. As soon as a man begins to realise that a profit is to be made out of land by co-operation he will want to learn how that profit by education might be increased?—The co-operative societies are mostly situated in large centres of industries in large towns. We do not have them in the rural districts, so that it does not apply so much to agriculture.

507. (By Lord Barnard.) There is one question I ought to have asked you before, Mr. Carrick. Is there a large importation of foreign dairy produce into the Tyne?—Very large.

508. Butter principally?—Yes.

509. Is there any milk?—Not much to the Tyne; scarcely any I think. It comes to Southampton, I believe, but not to the Tyne.

510. Cheese?—Cheese to a large extent from America.

511. But butter, principally from Scandinavian ports?—Yes.

512. (By Mr. Lamont.) Arising out of that, you were speaking as I came in about creameries; I think you said you were connected with two creameries? Are those in any way connected with the Armstrong College?—No; not in any way. They belong to a limited company.

513. Could they be adapted in any way for the use of the students?—At one of the creameries connected with the company I am chairman of we do allow the agricultural students of the Armstrong College to come there and take lessons in butter-making, and they get certificates.

514. Where is that creamery situated?—In Cumberland, about 12 miles beyond Carlisle.

515. Is there anything done there in the way of keeping a register of the yield of milk from each cow?—In Durham, at the Offerton Farm Dairy, there is a very carefully kept register.

516. And no doubt the breeding of your cows is carried out in some degree in connection with their milk yield?—No doubt; that is a very important thing.

The Chairman. We are very much obliged to you for your evidence.

Mr.
T. Carrick.
1 May, 1907.

Professor DOUGLAS A. GILCHRIST, M.Sc., F.R.S.E., called and examined.

517. (By the Chairman.) You are Professor of Agriculture and Rural Economy at Armstrong College, Newcastle-upon-Tyne?—I am.

518. You have had large experience of practical farming as well as in teaching and examining?—That is so.

519. You have also visited the research stations and colleges in Canada, Germany, France, and other countries?—Yes.

520. Do you consider that better circulation of information is wanted in this country, and the distribution of the new varieties of seeds, as in Canada?—I think that this is exceedingly desirable. The amount of matter that is sent out in a country like Canada is certainly far more effective because of the thorough means of distribution there is there as compared with what there is in this country.

521. Do you wish that information to be distributed by the Board of Agriculture to the local authorities?—Yes, either by the Board of Agriculture for general information, or by the colleges for local information.

522. With regard to veterinary science, is it your opinion that that is sufficiently provided for?—No; I am speaking now of Armstrong College in particular. We have no definite provision for instruction in veterinary science at present. We have a lecturer in agricultural zoology, but we have no distinct teaching in veterinary science.

523. Do you think that provision for veterinary science should be made at the college?—Yes, as veterinary hygiene.

524. The provision for teaching estate management is very inadequate?—Yes; we have a special opportunity

just now of developing the teaching of estate management at Armstrong College, because the Surveyors' Institution has placed at our disposal three scholarships worth £50 each for three years, and in addition we have a considerable number of intending land agents attending our classes at present, and that branch of the work could be very considerably developed. We are not fully efficient, so far as the teaching staff is concerned, in that branch.

525. You want a further development of that teaching?—Yes.

526. Who gives the teaching at present?—The lecturer on agriculture has been giving the teaching during the present and the past sessions.

527. Has he any practical experience of estate management?—Only to a small extent. At the same time he knows the work very well indeed, and so far as it has gone the class has been conducted in a very satisfactory way.

528. Is there sufficient provision for dairy instruction in the counties of Northumberland and Durham?—We have at present the Offerton Dairy Research Station, which is practically for dairy research. At this farm (over 400 acres), we have the use of a herd of more than 50 milch cows. There is also a travelling dairy school in the county of Durham, which is managed directly by the Durham County Council. At present 12 of the best pupils from these classes come to Newcastle every year for a course of instruction in dairying. At present we have not full facilities for giving that instruction, and no building for doing so; we have simply got a temporary place, and my opinion is that it is exceedingly desirable that some permanent provision should be made for some central teaching of

Prof. D. A.
Gilchrist.

528a

Prof. D. A.
Gilchrist.

1 May, 1907.

dairying for the counties of Northumberland and Durham.

529. Will you tell the Committee your opinion with regard to the relationship between the staff of the college and agriculturists in the counties connected therewith?—My opinion is this, that taking a group of counties such as Northumberland, Durham, Cumberland and Westmorland, first of all one can easily see that we have got eastern and western conditions, a very great variety of soils, and very considerable differences in farming, and it is all-important that the staff of an agricultural department like ours should be in thorough touch with the different branches of farming, and should have a practical and scientific knowledge of the soils, and be able to give advice to farmers with whom they come in contact; and in that way the work that we are now doing in investigating the soils of the different counties—we have done more at Cockle Park than elsewhere—and in collecting all the local information that we can, does put us in a much stronger position for giving advice, and it is very desirable, I think, that that side of the work, which should include all branches of agricultural research, should be developed.

530. I think you receive applications from farmers, and that those applications are encouraged by members of the staff travelling in the counties?—Members of the staff travelling in the counties receive a large number of verbal applications and give the advice right away, and in addition we have over seventy written applications every year asking for advice of a more elaborate character. This work, I am certain, could be greatly developed, and with great advantage to the agriculture of the counties, if our research work were extended and carried even more to the farmer than it is at present.

531. You would increase the number of stations where research was conducted so that the farmers would have easy access to those experiments—is that what I am to understand you mean?—Perhaps the best way I can put it is that I should develop, as far as possible, the central stations like Cockle Park and Offerton, and the stations in Cumberland and Westmorland, and then have in addition small demonstration plots at suitable centres, to demonstrate these lessons throughout the counties.

532. We, in this country, are not as well equipped as foreign countries and Canada to undertake the kind of agricultural research that you have just described, are we?—No, we are nothing like so well equipped.

533. The proportion of farmers who receive a scientific and business training as agriculturists is not very large, is it?—The proportion at present is very small indeed. I think the country generally has made remarkable progress, because less than twenty years ago little was done, but the proportion as yet is not nearly what it should be of those who do receive definite scientific and business instruction in agriculture.

534. The students in the agricultural department of your college, obtain degrees and they obtain certificates. Would you explain to the Committee what are the conditions under which the degree is obtained, and what are the conditions under which the certificate is obtained, and how the students are differentiated; for instance, whether a farmer's son gets a certificate and a landowner's son gets a degree, or do farmers' sons also attempt to obtain degrees?—I may say shortly that we can roughly classify our courses into long and short. First of all, taking the long courses, these again may be differentiated into three types: first, the degree course which extends over three years—for three full sessions; secondly, the diploma course, which, till two years ago, was called the certificate course, which extends over three winters; and thirdly, we have a considerable number taking courses of their own—a selection of the classes in agriculture, dairying, forestry, or estate management, some for one winter, some for one session, and some for longer. With regard to the class of student for the degree in agriculture the majority who have taken degrees are farmers' sons, but we have at present a graduate of Oxford who is now working for his degree in agriculture, and specializing in forestry. We have a few who are working directly for, or have gone in for land-agency, and with regard to the diploma course they are nearly all farmers' sons. Then, passing from the long courses to the short courses, those who take the farmers' course, usually about 20 every year, are practically all farmers' sons from

Northumberland or Durham, and those who take the short courses in dairying are practically all farmers' daughters from the county of Durham only, because the county of Northumberland is not doing any dairy work at present. Our dairy students, therefore, all come from Co. Durham. I should say we do not get dairy students from Cumberland and Westmorland, because in those counties they go to the Newton Rigg School, but we get agricultural students who come from those two counties, some of them being with scholarships from this school. There is one question I do not think I answered completely. We do get sons of city men, and when they decide to take a course of agriculture we always advise them to spend some time on a farm before coming to us, at least a year, and to spend their vacations—especially those taking the diploma course—on a farm while doing so, and we find those who do so are better students and take a greater interest in the work.

535. Is a degree or a diploma considered of higher value?—No doubt the degree is of higher value. The degree means taking a full three years' course, and is practically of as high a scientific value as a degree in pure science of Durham University. Perhaps I should just explain that Armstrong College is a college in Durham University, and that the degrees in science in Durham University are amongst those open to the students of Armstrong College.

536. Is the course for the degree and the course for the diploma identical in length?—No; the course for the degree extends to three years of three terms in each year—the two winter terms and the summer term. The course for the diploma extends to three winters only, so that it includes in all six terms, whereas the course for the degree includes nine terms. In addition, those taking the degree must pass a rather stiff preliminary examination, whereas those taking the diploma have no such examination.

537. Do students for a degree require more preliminary grounding than the students for the diploma?—Yes: and they take fuller courses, especially in pure science, than the students for the diploma.

538. (*By Lord Belper.*) Do I understand, that the certificate is the same as the diploma? The two terms have been used; are they the same thing?—Perhaps I can make that clear. Up to two years ago we had a certificate course, and we then changed the name to diploma; that is the reason I mentioned the two names.

539. (*By the Chairman.*) Is the amount of preparation which the degree students have received sufficient?—That is sufficient. Our difficulty is to get them to pass that examination.

540. Are you of opinion that there are sufficient secondary education schools and efficient secondary schools in order to prepare for the degree course?—No. We have now got a stiff entrance to our degree examination, and unfortunately we have not got the schools to provide for it. At present, most—not most, but I think, certainly a good many of the young fellows who come to us—have been to the North Eastern Counties School at Barnard Castle, and at that school they have got an efficient staff for this purpose. In Northumberland there is no such school and a considerable number of the Northumberland farmers' sons go to the North Eastern Counties School at Barnard Castle in the county of Durham.

541. Therefore you consider there is a need for such a school in Northumberland?—That, I believe, is so.

Lord Barnard. As I am one of the governors of the Barnard Castle School, perhaps I might say that although it is locally situated in one county, it really belongs to three besides Durham, Northumberland, Cumberland and the North Riding, and boys from each of those three counties are available at lower rates, so that in addition to Durham it serves those three counties.

542. (*By the Chairman.*) You would not find in France, or in any part of Denmark, an area of the extent of those three counties, without a sufficient number of secondary schools being of easy access to the population?—That is so.

543. How about Canada?—When I was in Canada, seven years ago, I know that a very important School was being built in Montreal. That, I believe, is now very fully developed, and what I was especially pleased to find in Canada was, that the old Scotch system of the farmers' sons going to the elementary schools

still holds good, and many of them get a very good education in those schools.

544. Your opinion is, that there is a great need of more extended secondary education?—That is so, undoubtedly.

545. You are in favour of that secondary education being general, and not having specific secondary agricultural schools as preparing centres for the degrees?—I should not answer that either one way or another. I have examined the Dauntsey Agricultural School in Wiltshire. That school is doing excellent work, and for farmers who can send their sons to a school like that there could not be a better school. But, perhaps, I may say this, that there are large market towns, and the smaller farmers round those would send their sons to secondary schools if they were there, whereas in many cases they could not afford to send them to a boarding-school where the cost would be so very much greater.

546. Do you think that if secondary schools were established, and you added an elementary agricultural side to them, it would attract the farmers' sons more than if you had a secondary school on general lines?—I hesitate in answering that because the cost of adding an agricultural side for a few pupils makes it exceedingly difficult to carry out, and I would much rather have a strong secondary school without the agricultural side, than a weaker secondary school with a weak agricultural side.

547. You are afraid that if an agricultural side were added the expenditure would be prohibitive?—Ideally I am in favour of it, but the cost and the difficulty of making the agricultural side efficient in a large number of schools is so great that I do not think it is possible.

548. There is, of course, another class for whom such a school would be intended. You have students going to the secondary school with a view afterwards of joining a college, but there must be a large number of boys in the rural districts who could not frequent school beyond the age of 16, and for them you will admit that it would be desirable to have secondary schools such as, for instance, have been established for years in France?—That would be so.

549. You would be in favour in the higher elementary schools of that class of boys being provided for?—Certainly.

550. How long do the short courses take?—The course for farmers' sons is held annually before Christmas, and extends for six weeks; it is held continuously. The course for dairy teaching up to two years ago extended to six weeks; now it extends to eight weeks.

551. That is in winter?—That is now in spring; it commenced a few days ago, and it is going on for eight weeks from now. It was in winter up to two years ago, but it has been altered now to the spring.

552. You are, of course, aware of the winter schools on the Continent?—Yes.

553. Would such a school do you think succeed here in a centre?—I think a development of our winter's course for farmers' sons would be much more effective, and certainly so in our district in the North, than the establishment of a winter school.

554. Do you think that those who frequent these short courses would be prepared to frequent what I call a winter school?—I have always in the examination at the end of the farmers' course had an oral examination, and most of them have expressed a wish to come back, but we have no scholarships for a single winter's course, say, of 20 weeks, and only a few of them have come back. I should very much like to see out of the 20 about one-third of the best of them coming back, and encouraged to come back, say, in the following winter for a one-winter's course, say, of 20 weeks. At present Lord Barnard provides one such scholarship from his estate in Co. Durham.

555. You think a winter course backed by scholarships would be a success?—Yes, and not only a success but of the greatest advantage to the agricultural population and agriculture generally in the North of England.

556. Is the staff of the agricultural department of your college adequate?—I think I have indicated our weak points in what I have already said about estate management and veterinary science. In those directions it is not adequate at present.

557. I see you have given us the amounts of the grants from the County Councils. I do not think I need ask you about that; that can be inserted and we can take that as read. The great bulk of the students both for the degree and for the diploma are farmers' sons?—That is so.

558. I see you say probably over 85 per cent?—Yes.

559. The short courses in forestry are taken by apprentices in forestry—I suppose by men who want to be foresters?—Yes. I omitted to mention that we have a short course in forestry, and that those taking that course are practically all apprentices in forestry.

560. In the dairy courses they are practically all farmers' daughters from the County of Durham?—Yes, practically all farmers' daughters.

561. I see that there are also a fair number of the sons of city men. What is their object in taking the course? Is their object to become surveyors or estate managers?—A number of them intend to become farmers, and one or two are actually farming now after having taken a course with us. Some intend going in for agricultural appointments, and a few for estate management.

562. What are the additions to the staff that you advocate? I see you give us the staff. You mention the staff giving whole time and the staff giving part time. What are the additions to the staff that you consider most urgent?—With regard to the staff, at present our staff includes a professor of agriculture, and a lecturer in agriculture. I may say the main duties of the lecturer in agriculture are to give extension lectures to farmers throughout Northumberland and Durham. Then there is a lecturer in agricultural chemistry, and a demonstrator in agricultural chemistry, who, owing to the tightness of our funds, is paid from the general funds of the college at the present time. The college has very kindly come to the assistance of the department in this way. There is also a lecturer in forestry, an agricultural zoologist, and although we have an instructor in horticulture who gets £110 a year, his salary is provided for by the counties of Cumberland and Westmorland, and he does not give any time to college work. So that if we did develop the horticultural work in the college something would be needed for that work. Then there is a prize demonstrator in agriculture, who receives £60. Formerly for that same position £120 was given, and £60 is not adequate for this purpose; that certainly should be larger. We pay part of the stipend of the professor of botany, £70, and part of the salary of the demonstrator in surveying, £60, while the arrangements we have for the classes in pure science, mathematics, chemistry, physics, geology and natural history are that they are open to the agricultural students on condition that the department hands over the usual fees in connection with those classes to the general college funds. Where we certainly are weak at the present time is that we have no direct provision in connection with estate management; that is done at present by the lecturer in agriculture, but better provision is required for that subject and we also have no lecturer in veterinary science in connection with the work. These are directions in which the staff should certainly be strengthened.

563. Are special arrangements made for the training of teachers in agriculture, or do you consider the degree course is sufficient for them?—The degree course we recognise as being a training for those who intend to become lecturers in agriculture either in the Colonies or in this country or abroad.

564. You do not think any additional arrangement should be made for training teachers?—There is one side of the work advisable that I think is included in your question, and that is giving a certain training in agricultural science to elementary teachers; we have no provision for that at the present time.

565. You have no courses for them?—There are no courses for them; and I think it is very advisable that something should be done in connection with agricultural teaching in that direction.

566. You think the elementary teachers would be quite ready to attend those lectures if they were given?—I think with suitable organisation that there would be no difficulty in getting their attendance.

567. What is the difficulty? Why has nothing been done in that? Is it financial?—I think it is very largely financial. As a matter of fact the Agricultural

Prof. D. A. Gilchrist.

1 May, 1907.

Prof. D. A.
Gilchrist.

1 May, 1907.

Committee of the College have taken the most important things to deal with, so far as their finances would allow them to do so.

568. Have you yourself given lectures in the neighbourhood to farmers?—Yes; I have given a considerable number throughout the four northern counties.

569. What was your experience with regard to the attendance at those lectures?—It has been very satisfactory.

570. Are sufficient lectures given? Is the system of lecturing at present organised in the counties?—In the county of Durham the lectures to farmers have always been a great success, and upwards of 40 have been given every year for a considerable number of years. In Northumberland, owing to financial pressure and to the money being spent in other directions, they have not been organised to the same extent. Probably there is another reason also. I should say, although Northumberland is a county much bigger than Durham, yet it has a smaller number of farmers; in other words, the farms are much larger, so that it is more difficult to get a class at many of the centres in Northumberland than it is in Durham. At the same time I am quite convinced, from the success of the lectures we have had, that that work could be considerably developed with advantage in the county of Northumberland.

571. Then your experience is that where the farms are smaller, and therefore a greater number in a smaller area, it is more easy to obtain an audience than where there are large farms and therefore the area of population is more scanty?—That is so.

572. I see that local field experiments are carried out at over 40 centres throughout the four northern counties?—Yes, we have over 40 centres for carrying these out.

573. Who takes charge of each centre?—The general division of work at present is that I am responsible as director at Cockle Park and take the general supervision of the local experiments in Northumberland and Cumberland, and the lecturer in agriculture has for the past three years undertaken the supervision of those going on in County Durham and in Westmorland. Then our demonstrator assists us, and in addition we have a gardener at the college who is a very intelligent man, and who sees to the manures, and either he or the demonstrator in agriculture always goes to each centre to see the manures applied, the crops weighed, and to supervise work of that character. What is very important is that we secure a centre, in many cases an old student of the college who is farming, and we always make certain to get a good farmer on whose farm to have the experiments, and a farmer who is naturally likely to be interested in the work and to carry out the local work cheerfully.

574. Those field experiments are watched with great interest by the farmers in the district?—Most of them are watched with very great interest by the farmers in the district. I may say some of them watch with very critical interest, but on the whole the results, so far as observation is concerned, are very satisfactory.

575. The farmers utilise the results which are obtained?—That is so to a large extent.

576. (*By Lord Barnard.*) I should like to ask you one or two questions about the secondary schools. I will confine what I have to say to the county of Durham, with which I am best acquainted. Can you tell us any district which is not provided with a secondary school in that county?—I cannot think of one. I am afraid I have not got such a knowledge of the county of Durham in that way as I have of Northumberland. No; I cannot tell you.

577. You will take it from me that, at any rate so far as South Durham is concerned, at every market centre—Darlington, Barnard Castle, Hartlepool, Durham—there is a secondary school in every one of those towns, and even up in the north district. You will take that from me?—Quite.

578. Will you also take it from me that an enormous number of children go by train to those schools from the more rural districts?—Yes; I have travelled with a considerable number of those children going on the Barnard Castle line and on the other lines.

579. Can you tell me of a single district in the county of Durham which can be properly called a rural district, that is to say, which is not affected by mining or ship-building or something of that kind—chiefly mining and

quarrying, of course?—The district of Upper Teesdale has got a certain amount of mining, but still the mining in some parts does not alter its rural character. All the miners at the same time do agricultural work. Then the district from Wolsingham going west towards Alston includes a considerable rural district, with mining at each end, but there is no large rural district in County Durham.

580. There is no purely rural district?—No; I might say in connection with that that all the better land is in the busy industrial districts in the county of Durham, and the quieter parts of the county are mainly in the moorland country to the west.

581. Can you give the Committee any idea as to the size of the farms in the counties of Northumberland and Durham. Should I be right in saying that there are no enclosed farms practically—of course I do not include moors—in the county of Durham of over 500 acres?—I know there are very few; I am speaking from memory. I think there is one certainly between 500 and 1,000 acres.

582. Yes?—But I know there are not many over 500 acres.

583. At the other end in the Weardale and Teesdale district and the Dale county generally, there are a large number of farmers who are either themselves or their families engaged in lead mining and quarrying as well?—Yes, there are a very large number.

584. That leads me to another point that has been touched upon in this enquiry—the question of labourers. On the Dale farms there are practically no labourers at all. I mean the man and his wife and family do practically all the work themselves?—Yes, the man and his family do all the work. I might add generally that every member of the farmer's family is a labourer as a rule—they are working farmers.

585. Farm labourers in the North of England are in a very different position from what they are in other parts of England, in consequence of the system known as the hirings, and the general practice of farm labourers to move every year?—I do not know that side of it so much, but I do know that the wages paid to the farm labourers in Northumberland and Durham are very much higher than they are in the southern and midland counties, and that the efficiency of the labourer is also considerably better.

586. You are not aware of the fact that the farm labourer is a yearly servant in the North-east of England as a rule, are you?—Yes, I know that; and, further, he is paid for his whole time; whereas, in many of the southern counties some of them are engaged for part of the year and not engaged fully in the winter months.

587. There is no settled population of the labourers in the north-east?—Not to farms but to districts.

588. One question as to the size of the farms in Northumberland. They are large farms there except up towards the moors?—Yes, the farms are very much larger, especially in the north of Northumberland, taking the Wooler district up to the Tweed and all the Belford district.

589. It is also very highly farmed?—Yes, it is a well farmed district.

590. Cumberland is more of the same type as Durham—amongst the hills at any rate?—Yes. Of course, there is a much larger number of statesmen—men who own their farms—in Cumberland.

591. Yes. I should like to ask you one or two questions in consequence of a question that Lord Belper asked the last witness about the college itself. The college is a very large and progressive institution?—Yes.

592. It was instituted for the purpose of providing higher technical and scientific instruction for the enormous population of Tyneside really?—Yes, it was founded in 1871 jointly by the University of Durham and the North of England Institute of Mining and Mechanical Engineers.

593. Do you know the number of students at present?—The number of day-students is over 500.

594. There are various departments, mining and metallurgy, marine engineering, naval architecture, electrical engineering, and so on?—Yes, naval architecture is a new department. There is our department

of chemistry also, which is a very strong one, as well as other departments in pure science, arts, &c.

595. The agricultural department is merely a department of that college which gives special instruction in agricultural subjects?—That is so.

596. It gives the students in the agricultural department the advantage of getting the teaching from teachers in the other departments, such as chemistry and pure science?—Yes. By the Agricultural Committee co-operating with the college they have practically saved the cost of providing instruction in pure science, because that is already provided for in Armstrong College, which is practically a university college.

597. The funds of the department are kept distinct?—Yes.

598. They are under the supervision and control of the committee?—Of the Agricultural Committee of the college.

599. Which practically manages them by means of a sub-committee?—Yes.

600. The sub-committee go very closely into all the details of the finances?—They examine into every item of expenditure.

601. And the accounts are submitted to and examined also by the Board of Agriculture?—Yes.

602. And also, I think by the college accountant?—Yes, they are audited along with the college accounts.

603. So that there would not be any opportunities of unduly increasing salaries even if it were attempted; it would soon be found out?—Yes, and there are several other checks.

604. To prove that this department of the college is meeting with the approval of the public in addition to the action of the Surveyors' Institution, to which you have already alluded, is it not the fact that some endowments have recently been left to it?—A large endowment has recently been left, the Daglish Bequest, to the college, from part of which, when it comes into operation, the agricultural department will derive some benefit.

605. Have you any opinion with regard to the Consultative Committee which has been suggested? Do you think that would be a useful institution?—I think the Consultative Committee for agricultural education generally would be exceedingly useful.

606. Do you think that representatives from so far off as Newcastle would be able to attend very regularly?—It would be unfortunate, I think, if the meetings were held frequently, but if the meetings were held once a year I do not see why they should not attend. I do not think it would be desirable to have meetings more frequently than once a year.

607. Is it not a fact that co-operation in all the Durham mining villages is very common. There are a great number of co-operative societies, are there not?—That is so, and in connection with the Agricultural Co-operative Society an association has been formed in the middle of Northumberland which I believe is becoming quite useful. In connection with co-operation there is a very strong body of farmers in the Darlington district, called the Tenant Farmers' Protection Association, which, although not strictly a co-operative society, has done very great service to farmers by helping its members when they get into any business difficulties, and that association has proved a most valuable thing for the farmers, and I may say also we have found it a most valuable agency in connection with education.

608. I was going to ask you what effect co-operative societies have had on education?—This association has had a most important effect. Among the best audiences we have had, have been meetings of this association, and some of the largest parties that have come to Cockle Park have been organised by the same association.

609. On the other hand, the ordinary miners' co-operative societies have not had any effect whatever—they have taken no action?—I am not aware of it.

610. They probably buy very largely foreign produce too?—Very likely.

611. I do not think I need ask you any questions about the forestry department because that is very fully explained in your book. I may just ask you this:

It is a fact, is it not, that the forestry sub-department, I may call it, have got a very large area of wood under its control?—We have now got under the control of the forestry section of the department, not only the forestry plantations at Cockle Park in Northumberland, but we have an area of about 900 acres, the Chopwell Woods, which His Majesty's Office of Woods has placed under the management of the College, and which we have got for demonstration purposes. That will prove very valuable indeed. In addition we have several demonstration plots, and the principal land owners in the North of England have also opened their woods to us for demonstration purposes in connection with the Forestry Department.

612. Has it been your habit to go about a great deal, and also in the character of a lecturer to meetings of farmers' clubs and chambers of agriculture, and so on?—Yes, I have attended a great many of those meetings.

613. Do you find that your visits are appreciated?—Yes, I believe so.

614. You publish bulletins?—Yes, and we take copies of them with us to distribute at such meetings.

615. Have you any of those here?—Yes.

616. Could you give the Committee one as a specimen?—That is one. (*Handing book.*)

617. How many do you publish of these in a year?—We published about eight bulletins of this character last year. That bulletin I am passing round is a bulletin giving the result of our rotation experiments at several centres in the North of England, and giving a description of the soils also at those centres. We have also a report here, another bulletin, on the manuring of root crops and potatoes in the county of Durham during last season; and there is a bulletin here for which there has been a considerable demand—the report on the Tree Field experiments at Cockle Park for nine years, dealing with the pasture experiments there.

618. You have also published a bulletin on feeding experiments with sheep, and on finger-and-toe disease, have not you?—Yes. The bulletin we published on the feeding of cattle and sheep with Bombay cake has greatly increased the sale of that cake in the North of England, and has given a knowledge of that cake to farmers that they otherwise would not have got. It is a new food, and a knowledge as to its feeding value was very much wanted.

619. You think these bulletins are appreciated?—I am sure they are.

620. You have applications for them and questions addressed to you with regard to them?—Yes. And in giving information these bulletins are of the greatest assistance to us, because it often saves having to put a long account in a letter, because we can simply refer to a result in the bulletin.

621. They cost a good deal for printing, I suppose?—Yes, they do cost a good deal for printing.

622. While I am on the subject of finance again, the College assist the department a good deal indirectly, do not they?—Yes, indirectly. No charge is made for heating or lighting the agricultural rooms, or for general expenses like the porter, and we have all the advantages of the Principal and of the Secretary of the College without paying for them.

623. So that the Agricultural Department is a department of the College, and the College practically does not interfere with it. It is a fact, is it not, that the Council of the College retain and are responsible for supreme control?—The Council of the College can amend or reject any resolution of the Agricultural Committee, but I believe they have never done so.

624. They appoint all the staff, but on the recommendation of the Committee?—Yes.

625. Only one more point about the North Eastern Counties School at Barnard Castle. You have mentioned the fact that there is an agricultural side to that school. Are you aware that it is a question whether that can be continued—that that matter has been for some time under consideration?—I am aware that the agricultural side of that school was, and I believe is, in a very precarious condition. I should be very sorry indeed, for the sake of agricultural education in the North of England, if that side were allowed to go down. I feel it would be a loss to the district.

626. (*By Lord Belper.*) I do not think I need ask you

Prof. D. A. Gilchrist.
1 May, 1907.

Prof. D. A.
Gilchrist.

1 May, 1907.

anything about your College, because the questions which Lord Barnard has asked have fully explained what your position is with regard to the Department of Agriculture. I should only like to ask one question about your Forestry Department. Has that been established long?—The Forestry Department was really founded in 1892 when Dr. Somerville was appointed not only as Professor of Agriculture but as Professor of Agriculture and Forestry. Dr. Somerville gave lectures in Forestry, and established the forestry plantations at Cockle Park as well as other work. That was greatly developed three years ago when we were able to do so by the addition of the Board's grant of £250, when we appointed a lecturer specially for this work.

627. That is three years ago?—That is three years ago.

628. I see from this book that out of a total expenditure on the Forestry Department of £319 the Board of Agriculture made a grant of £250?—Yes.

629. £58 was met by subscriptions and fees for advice?—Yes, and fees of Forestry students.

630. The students' fees apparently are £13. That is not a large sum?—No, but the fees for other than pure forestry classes go to other Departments.

631. Practically the whole of your expenses are met in that way. £58 in subscriptions, £250 from the Board of Agriculture, and these students' fees?—Yes, and we keep the Forestry account distinct.

632. Was that grant given to you because those woods were handed over to you?—No. The use of the woods was obtained because the lecturer whom we appointed approached the Office of Woods—or rather, we approached the Board of Agriculture and the Office of Woods—and it was after negotiations with the Office of Woods that the management of Chopwell Woods was vested in the college.

633. Therefore your enterprise took place after you got the grant really?—At the same time we had an elaborate Forestry scheme prepared, and the offer of extensive facilities when we applied for the grant. We certainly have got some excellent woods for demonstration—woods on Tyneside, and there has always been a great interest in Forestry on Tyneside.

634. Is Forestry made a subject for any of your diplomas or degrees?—Yes, both for the degrees and in the diplomas.

635. Is it a compulsory subject, or can it be taken up as an alternative for other subjects?—For the degree it is a compulsory subject, but for the diploma it is an optional one.

636. I see you have started some lecturing, but only in one centre, and only three lectures have been given. I am talking of the paragraph in your report which says: "In Forestry a course of three lectures was given at one centre to an average audience of twenty." Is that the extent of your lecturing in Forestry?—Might I know the year of that.

637. This is the Annual Report for 1905-6. That is the extension work. It is on page 18?—In Northumberland courses of six lectures in Forestry were given at one centre, of four at another, and of three at one other centre; so that there were courses of Forestry in three centres in Northumberland. In Durham a course of three lectures was given at one centre. There were none in Cumberland or Westmorland.

638. Yes, I was wrong. There were courses at two centres, one in Northumberland and one in Durham?—Courses at three centres in Northumberland and at one in Durham; that is four centres altogether.

639. (By Mr. Lamont.) You said in answer to Lord Barnard that there were in the County of Durham several co-operative societies?—There are several mining co-operative societies.

640. Are there any co-operative societies of small farmers?—I do not think so in the ordinary sense of co-operative societies, but there is this body that I referred to, the Tenant Farmers' Protection Association, which is practically a co-operative society, although not in the usual sense; it is not a co-operative society for buying.

641. (By Lord Barnard.) There is a newly-formed one called the Middleton-in-Teesdale Co-operative Society?—Yes, I am sorry I forgot to mention that.

642. (By Mr. Lamont.) I wanted to get whether those

societies exist for the purpose of purchase or for the sale of produce or for both?—Primarily the object of the Society just mentioned is to assist the farmer both in buying and selling. I should say that the North of England farmer is not taking very kindly to co-operation on the whole.

643. (By Lord Moreton.) I do not quite understand about the degree. Is it a degree of the University of Durham?—Yes, it is a degree of the University of Durham.

644. We have heard a great deal from you and from the last witness about the pupils. Can you give us any idea as to what it would cost a farmer's son to come up and go in first of all for the degree?—For the degree course the tuition fees amount to £20 a year, and if you take the whole cost, including the cost of living in Newcastle it could be comfortably done for £60 a session. That is £180 for the three years.

645. Now, will you give us the same with regard to the diploma course?—With regard to the diploma course the tuition fees are £10, and as the students come up for two terms only (or the winter) the cost is considerably less; it can be done, with economy, for about £30 for each winter.

646. As regards the diploma course, I suppose you have students slightly older by a few years than would come up for the other course; in other words, probably they would be youths who had left school for some little time?—We prefer for both courses that they should have left school for a year or two, because we find although they do not do so well in the pure science side they do much better in the agricultural sides.

647. Do you find when they come up like that that a certain amount of time is wasted through their having forgotten their mathematics a good deal?—They certainly have forgotten their mathematics, but on the other hand I do not think the time is wasted, because if you give lectures in agriculture to boys who have just left school they do not take the same interest or get the same amount of benefit from them as young men who have had two or three years on the farm before coming to take that technical course do.

648. With regard to the instruction in veterinary science that your pupils get, is that satisfactory, or if you had more money would you increase the teaching?—We certainly should, and with regard to dairying it is very desirable that that should be increased, especially in the North of England. In the past, education in dairying has practically meant education in butter and cheese making, but in the whole of our district very little butter and very little cheese is made, and now with this inquiry into tuberculosis and the difficulty the farmers have got owing to the milk standard it is of importance that efficient education should be given to the young dairy farmers, because the dairy farmers' business is becoming a very complicated one and very harassing. It is, therefore, exceedingly desirable that suitable education should be provided for the young dairy farmer, and for that we are not as fully equipped as we should be.

649. (By Mr. Staveley-Hill.) You have been asked about these short courses. They are in the return here. The number seems to remain normally at about 30, whereas some years ago, in 1900, it was 59. Is there any reason why there should be such a drop in seven years; it has gradually gone down?—I think probably two dairy courses have been given in the year instead of one.

650. That may explain it, otherwise it is rather a remarkable drop from 59 down to 34?—It is.

651. What would two dairy courses mean? I see the figures in front of me refer to "farmers' sons and dairy short courses." That is the heading of it, and I come to the figure 59 in the year 1900, and it drops down to 34 in the year 1906.

652. (Mr. Middleton.) I can explain that point from memory. It must have been due to the dairy course; the number of farmers' sons was about the same in each year, but the dairy courses were arranged sometimes in winter and sometimes in summer, according to convenience, and that accounts for it. Of course, I have no particulars before me. I am only speaking from memory.—I think that is the explanation. Practically every year Northumberland gives 10 exhibitions and Durham 10 exhibitions for the short course for farmers' sons, and we have usually one or two who pay their own expenses. That gives us annually from 20 to

22 taking the six weeks' farmers' course. I put a point of interrogation for this year to the number taking the dairy course, because the classes only commenced this week, but we usually have 12 from County Durham for dairy courses each year.

653. (*By Mr. Staveley-Hill.*) Four counties are connected with this College, are they not?—Yes.

654. Is there a general Council of those four counties to manage the College?—The Agricultural Committee consists of representatives of those four counties and of direct representatives of the College—that is the Committee which has the management of the Agricultural Department.

655. That is a joint county Agricultural Committee.—No; it is a College Committee, but the County Councils appoint representatives on the College Committee.

656. Could that be extended by a County Committee of all four counties? Do you think there is any better way by which those counties could be represented?—This Committee is working in an exceedingly satisfactory way. So long as the representation is all right, and especially as there is such a close connection with the College, I think, so long as the counties are efficiently represented on the College Committee, that the arrangement is a very satisfactory one.

657. The buildings of your College are all now complete, are they not?—We thought so till a year ago, but there may soon be a further extension for Naval Architecture and other purposes. We have now completed the new wing.

658. If you had any extra grant some of it would have to be devoted to building, and not all to the scientific or to the teaching part.—Hitherto all the agricultural grants have been devoted to agricultural research or to teaching.

659. Not to buildings?—Not to buildings.

660. You have visited the Canadian Colleges of a similar character, have you not?—Yes.

661. Have you visited the New York Department?—No.

662. What is the system of grant in the Canadian Colleges—the one at Montreal, for instance, that you mentioned?—The one at Montreal is a school, and is founded largely by a private endowment by a Mr. Macdonald, but taking first of all the Canadian Government farms, the central farm at Ottawa, of which Dr. Saunders is the Director, and the farms for all the provinces, are subsidised directly by the Government. Among the Colleges the Ontario Agricultural College at Guelph is subsidised by the Province of Ontario.

663. (*By Mr. Middleton.*) First of all you told us that you required buildings at Newcastle, but I think you explained later that what you require is a dairy building only; you have suitable accommodation provided for the College?—Yes, that is so, but we are very much in want of dairy accommodation at the present time.

664. To the list of students that you have given us could you conveniently add the number of entries—the number of students who have joined the Institution each year? That statement you could perhaps send to us. Our object is to get a comparative statement, and it is a little difficult if we do not know the number of entries?—Yes.

[*The Witness subsequently wrote that the number of agricultural students entering Armstrong College each year as new students for long courses of study were: 1891-2, 4; 1892-3, 4; 1893-4, 12; 1894-5, 15; 1895-6, 7; 1897-8, 9; 1898-9, 15; 1899-1900, 4; 1900-1, 2; 1902-3, 14; 1903-4, 12; 1904-5, 14; 1905-6, 18; 1906-7, 14.*]

665. Have you formed any opinion of the character of the short-course students coming from the counties of Northumberland and Durham; which group of students do you expect to do best?—There is very little difference between them.

666. You find them very similar?—Yes, on the whole they are very similar. These come mostly from the smaller farms.

667. As regards the long courses, do your students now come chiefly from Durham or from Northumberland?—There are considerably more from Durham than from Northumberland, and I think that is very largely due to the larger number of extension lectures that have been given in Durham. Of course, Durham is a better recruiting ground as there is a large number of farmers,

but no doubt it is the lectures that have had that effect.

668. Have you found that the agricultural population of Durham are more easy to teach, by way of lectures, than the agricultural population of Northumberland—I do not know whether you would like to say so?—I must say that in both counties I have had great pleasure in lecturing, and I have been listened to with the greatest of interest by the farmers.

669. Do you think that the presence of the industrial population, side by side with the agricultural population in Durham, has had something to do with the way in which the Durham farmer comes to lectures and listens to lectures?—I do not think so. I think our meetings have been as good in the more strictly rural districts as in the populous centres.

670. With regard to the North Eastern Counties School at Barnard Castle, that school is, I believe, largely taken advantage of by farmers' sons?—That is so.

671. Chiefly farmers' sons?—Yes.

Lord Barnard: I would not go so far as to say "chiefly." There are a great many farmers' sons.

672. (*By Mr. Middleton.*) The agricultural side has not been a successful side, has it?—At present there are ten boys on the agricultural side, and that is a very small proportion of the total number of boys in the school. A considerable proportion of farmers' sons go there not for the agricultural side at all, but for the other sides.

673. (*By Mr. Latham.*) Taking the last question first, is there any reason why the farmers' sons do not join the agricultural side?—I think it has been largely because on the whole the farmer is very conservative, and he has already found schools to send his sons to in many cases. I am thinking of the Northumberland farmer now. He sends his boys to schools in other counties altogether; he has got into the habit of doing so, and it has become a family arrangement, and it does take time to alter their habits.

674. You made a remark just now that a large number of farmers' sons went there, but not for the agricultural side, and I ask you, is there any reason why the farmers' sons do not join the agricultural side?—Of course there is one very important reason for that, and that is that a large number of farmers' sons are not going in for farming at all.

675. Is that the answer why the secondary schools cannot support the agricultural side, because the farmers' sons now-a-days are not going into farming?—No; if all the boys who are intended for farmers in Northumberland and Durham did go to the agricultural side of Barnard Castle School there would be a considerable number.

676. What is the reason that they do not go there?—I can only say that I think the parents have got into the habit of sending them to other schools.

677. Other schools without agricultural sides?—Without agricultural sides.

678. And although they do not join the agricultural sides they come to you afterwards?—Some of them do.

679. Is not their agricultural education very much lessened in consequence?—Of course, I may say that that is not very important in the case of those who come to us for the agricultural side, because they get the agricultural training when they come to us, and if they are going in for the degree what we want is a good secondary training. But a school with an agricultural side is especially wanted for the farmer's son who is going to finish his education at a secondary school.

680. And not coming on to you?—And not coming on to us.

681. Then it is a very serious loss that they do not join the agricultural side?—Yes, if they are not going further than the secondary school.

682. You spoke of having applications for advice; could you tell us the character of those applications?—The character of the applications for advice, to take the letters I have had just lately—the last one I had just before coming here enquired "How to apply the tuberculin test," and there have been a good many letters as to the feeding of dairy cows and live stock generally. Lately, during the Spring, there have been a considerable number of enquiries as to the manuring of different crops and of hay and pasture.

683. Have you had any enquires under the Fertilisers Act?—In connection with that, as a college, we do

Prof. D. A. Gilchrist.

1 May, 1907.

Prof. D. A. Gilchrist.

1 May, 1907.

not analyse under the Fertilisers and Feeding Stuffs Act, because there is a feeling in the College that a college that is subsidised should not undertake analyses for commercial purposes, but we have a considerable number of enquiries; farmers send to us copies of invoices and copies of quotations that they receive for manures, and ask for an opinion as to the quality of those manures.

684. You spoke of your records as being very valuable, and you told us that you published them?—Yes.

685. Are they to be had free or at small cost?—They are to be had free by residents in the four northern counties through the County Councils.

686. There is a general desire for small holdings, and you have been talking about the working farmers. Have they any opportunity of getting benefit from your College?—In the County of Durham a considerable number of those who attend the extension lectures are small holders.

687. Are the lectures free?—They are practically free; in some cases a charge of 1d. or 2d. is made.

688. You made a remark just now that I was very much surprised to hear you make about farm servants. You said that in the south they were only engaged for the summer months; I think that is practically wrong?—You know more about Oxfordshire than I do, but I believe it is true, but on the whole all the farm labourers are engaged throughout the year in the north of England, whereas a considerable number are engaged only for a certain time of the year in the south, speaking generally.

689. I do not think that is so, and I was rather surprised also to hear Lord Barnard make the remark he did with regard to that, because our servants in the south are engaged quite as much at a yearly wage as they are in the north, I think. With regard to the appointment of a Consultative Committee, and to your remark that the men in the north would not probably attend very regularly, I suppose you are aware that the attendance of members from the north at the Central Chamber of Agriculture are much more regular than they are in the south?—I feel there would be a good attendance so long as the meetings were not held too frequently; and I do know, as you have mentioned, that the northern members, who are representatives of the Central Chamber of Agriculture and of the London Farmers' Club, are very regular attenders.

690. I should like you to give us a little further information as to how much further you would go with dairy education if you had the chance?—In answering your question I might say you know of my old connection with Reading, and there is an excellent institution there, the British Dairy Institute; but at Armstrong College there is nothing of that kind. There is practically no provision for development in Northumberland, and I should like to see, not a national institution like that at Reading, which is not what we want, but some central provision for dairy instruction and for dairy research.

691. But very much on the Reading lines?—Yes; and as we produce such a large amount of milk the work should be more on the lines of milk production as well as on cheese and butter.

692. Do not you think, going back to the lectures, that the audiences are not so much to blame very often as the lecturers. I have attended a great many of them in the south, and I think they are very often too far advanced for their audience?—I think probably you are thinking of an instance in the South of England, where a lecturer who had given a lecture, had referred to a certain animal as a "Shorthorn" when it was nothing of the kind. When I commenced work at Reading in 1894, I found this and some similar instances had given a bad impression of agricultural lecturers. There have been difficulties of that kind, no doubt, but in the beginning of the work in some cases the wrong type of man was engaged, but in my experience in lecturing to farmers since 1889 I have never had any difficulty, except perhaps at the first meetings, so far as prejudice is concerned, and I have no hesitation in saying that the prejudices of the British farmer are very much over-estimated, that he is a very sensible man at bottom, and it is astonishing, bearing in mind what he has been considered by some to be in this country, how well he gets on the moment he goes to the Colonies.

693. We have had lectures in Berkshire to farmers,

which have been very well attended indeed. Mr. Percival, the lecturer, is a very popular man, and if a lecture is not a success it is not the audience that is to blame, but the lecturer?—That is likely to be so.

694. (*By Dr. Somerville.*) Referring to your desire to see a great central dairy school in the North of England, you have always referred to that in connection with the counties of Durham and Northumberland only; do you deliberately exclude Cumberland and Westmorland?—I should have explained that at present there is the Newton Rigg Farm School for Cumberland and Westmorland, where very efficient and excellent dairy instruction is given. That is the school for those counties, but we have no provision of the kind for the counties of Northumberland and Durham.

695. So that in your opinion the Newton Rigg School supplies the requirements of Cumberland and Westmorland?—Yes, I think so, and very usefully too.

696. Would it not be possible to utilise that school for the requirements of the pupils in Northumberland and Durham?—To a certain extent it would, but the dairying carried on in Cumberland and Westmorland is very largely butter-making and cheese-making. That is the work for which the Newton Rigg School is equipped, whereas in Northumberland and Durham the dairying is very largely milk production, and the work that is really needed includes bacteriology and the general production of milk, and therefore work of a special character.

697. I think you said that in the future you would like to strengthen the instruction in dairying, estate management and veterinary science at your College?—Yes.

698. Have you, at the present time, an instructor in veterinary science in your department?—No, we have an instructor in agricultural zoology, who does do a certain amount of veterinary science, but he has not had a special training in veterinary science.

699. You would like a duly qualified veterinary practitioner to be attached?—Yes, to give part of his time.

700. Have you had any difficulty in the way of opposition from veterinary practitioners to the giving of veterinary instruction to farmers?—We have had some difficulty in that respect, but, at Bangor, we overcame that difficulty in a very satisfactory way, and at Reading also. At both those places it is done in a most satisfactory way.

701. Have you heard that the veterinary profession generally rather set their face against instructing young farmers in the mysteries of their profession?—Yes.

702. Do you know, in fact, that you have had to appoint in the North of England a qualified zoologist to give instruction in veterinary science, because, hitherto, members of the veterinary profession, who had been willing to give instruction, have had pressure brought to bear upon them to induce them to desist from doing so?—I think I may say that whereas pressure at one time was against it, that pressure is not now so strong. Mr. Clement Stevenson, who is one of our best known veterinary surgeons in the North of England, and a member of the College Agricultural Committee, supports the veterinary qualification for this purpose.

703. I am very glad to hear that. You have already told us a good deal about the arrangements as regards the degrees and diplomas, but I should just like to hark back to those for one moment. I should like to know whether any practical qualification is demanded either from candidates for the diploma or for the degree?—Formally no qualification of that kind is demanded, but in the way in which the practical examination for the degree is carried out now, which is held at Cockle Park, they could not get through unless they had some practical knowledge of agriculture.

704. So that the examination is partly conducted on the land?—Yes.

705. But no requirements, as regards residence on a farm, are demanded?—No.

706. You do not think that is desirable, do you?—Yes, personally, I am of the opinion that that is desirable.

707. Do you know that it is the case, for example in Edinburgh that a man cannot go in for an agriculture degree unless he has resided for 12 months on a farm?—Yes.

708. If that could be managed would you like to see that in your case?—Yes, I should like to see that.

709. You have already told us that the degree is the

higher qualification in the North of England. We had evidence from Cambridge yesterday to the effect that the degree was a lower qualification than the diploma?—I think there is this difference in Armstrong College, that the degree course is wholly framed for agriculturists; it is not simply taking agriculture as an optional subject. The degree course is framed throughout with the object of giving a complete scientific and agricultural training.

710. Could a man get a certificate in agriculture at the end of, we will say, the intermediate stage in his diploma examination?—No.

711. Have you ever in the North of England found that men who had taken their degree in pure science were induced to remain on for another year to specialise in agriculture and take their diploma?—We have not had a case of that kind, at any rate, for four years.

712. We had evidence yesterday that at Cambridge a great many young men embark on pure science, and when they get their degree in pure science they realise that they have not secured a profession, and that they then proceed to study agriculture and take a diploma. You do not find in the North of England that the young men embark on education without knowing what the end of it is going to be?—I think the great bulk of our students in the Armstrong College have an object when they start, and most of them stick to it.

713. They are in fact more practical from the beginning than in some of the other institutions in England?—I think that is so.

714. I suppose these bulletins and returns that you issue have a distinct local bearing?—Yes; they have all got a distinct local bearing.

715. You do not, I suppose, attempt to dispense with the leaflets that are issued by the Board of Agriculture now?—No; on the contrary; I think we do make the fullest use of the Board of Agriculture leaflets.

716. You know they issue about 200 leaflets?—Yes.

717. Are you able to utilise them in your courses of instruction?—The Board of Agriculture leaflets in the past few years have been invaluable to us in teaching; they have been of the greatest service in connection with our classes in agriculture, and if we go to give an address to farmers and there is a leaflet published on that subject we can take copies of the leaflet and distribute it amongst them at the meeting, explain what the leaflet means, and then each farmer has something definite to carry away with him. It may be if we give an address on our own experiments that we take our own bulletins and distribute them in the same way. I may say in connection with this that we have a very strong Agricultural Students' Association formed of past students, and we arrange that those leaflets as issued are sent to each member of that association, and these are greatly appreciated by the members.

718. You mentioned that the salary of the horticulturist, £110 a year, was all found by Cumberland and Westmorland?—Yes.

719. Does Northumberland take no part in the horticultural work of the College?—I should explain in this connection that up to three years ago the county of Northumberland paid half the stipend and took half the time of our College instructor in horticulture, and Cumberland the other half. But a re-arrangement was made and Cumberland took two-thirds of the time of the College instructor in horticulture and Westmorland one third, and the arrangement now with Northumberland is that Northumberland engages their own instructor. He is doing excellent work. He lives at Cockle Park. The Committee give him a house to live in, and he supervises the experimental garden at Cockle Park. In that way he works directly for the Station, but otherwise he is engaged by the County Council.

720. So that you have now two instructors, one confined to Northumberland and the other to Cumberland and Westmorland, and that Durham makes no demand?—We have applications for lectures from Durham, but we have no one whom we can send to give those lectures—but there is a demand for them at the present time.

721. I suppose a very large part of the benefit that your Agricultural Department confers in the North of England lies along the line of the research and demonstrations that it conducts?—Probably the most important part of our work is research.

722. If that is the most important part of your work, or nearly so, do you not think that as regards future development you would include research along with dairying, estate management and veterinary science?—Yes, I certainly should; I intended to include that.

723. Do you think public funds could be utilized to a larger extent in the North of England for the prosecution of agricultural research than has been the case in the past?—When I stated as my opinion that no centre for agricultural education was complete until the staff were in complete touch with the agriculturists in the counties connected with it, I did mean that that should only be by original research in connection with soils and crops, and all that kind of thing, and that that work was capable of great development. I meant that as the most important direction in which we could develop.

724. (By Lord Barnard.) I want to make one comment on the question of the connection between Cumberland and Westmorland and the neighbouring counties. It must not be overlooked that there is a comparatively high range—I will not call them mountains—that runs north and south. There are only two lines of communication, one of which is frequently blocked in winter with snow, and the consequence is that the inter-communication between the two eastern and two western counties is very, very difficult indeed. Inter-communication east and west is very difficult. That accounts, I think, to some extent for the fact that Cumberland and Westmorland have their dairy instruction separately?—No doubt.

725. (By Mr. Medd.) Do the local councils consult your committee as to the general scheme of education in each county or only as to the general work in which you assist them?—We have now—we have only had it for a year—an agricultural sub-committee for the county of Durham, on which the College is represented, and the Cockle Park Management Committee is practically the agricultural sub-committee for the Northumberland County Council; on which also the College is represented.

726. The other two counties have no agricultural sub-committees, have they?—Yes. The other two counties, Cumberland and Westmorland, have the farm management committee of Newton Rigg.

727. They do not consult your College committee with reference to any general scheme for the whole of the area—they work independently?—Cumberland and Westmorland work independently.

728. You do propose to establish a joint agricultural committee, do you not?—I should say while the committees work independently the fact of our having representatives of all four counties on our College agricultural committee gives an opportunity for discussing any work in the four counties.

729. It rather enables you to ascertain what is being done, but it does not give you any power to systematise it, and one wants systematisation of individual effort, and that can only be done by a joint committee?—That is so.

730. With regard to this secondary school question, I take it that for the students coming to you what you consider the best material is the product of a first-rate secondary school without any specialisation up to the age of 17 or 18—a *bona fide* secondary education?—No, I should not say that, because we have some students now, who have come from Dauntsey, who are really as good students as any that we have had. There is a risk that, if there is specialisation, the main character of the education is not so good, but, so long as that is looked after, they are all the better for having a certain amount of specialisation as long as that is not carried too far.

731. Of course, the Dauntsey School is exceptional, as you know; there is no school corresponding to it exactly, is there?—No. At Reading we got some very good students from the Burford Grammar School, from the agricultural side, and I believe that that side is now working very well indeed.

732. In reference to Barnard Castle, you said that the attitude of the farmers towards the agricultural side is not very favourable, or at least that it is indifferent?—I should say it is indifferent rather than unfavourable.

Prof. D. A.
Gilchrist.
1 May, 1907.

Prof. D. A.
Güchris.

1 May, 1907.

733. I suppose you are familiar with the curriculum there?—Yes.

734. Is there any subject included in that curriculum which is not appropriate to general education? I know of none. I put it rather in this way, that all this so-called agricultural side teaching is merely the study of natural and physical phenomena, which is just as appropriate to a man who is going to be a barrister as to a man who is going to be a farmer, for educative purposes?—At Barnard Castle there is a considerable amount of direct agricultural instruction given. There are a few acres of land and there are some plots with the different crops grown—small rotation experiments are carried out—and there are some pasture plots adjoining the school, while a certain amount of milk testing goes on, all of which could not be looked upon as otherwise than the agricultural side.

735. No, not the milk testing, but the experiments with regard to plants is all part of ordinary education apart from any specific reference to agriculture?—No, that is not what would be wanted in a secondary school.

736. No; but my feeling is rather this, that the term "agricultural" is misleading when used in connection with those schools, and it is on account of the use of that term that farmers fight shy of them. They have no objection to the instruction *per se*, but they do not believe that the art of farming can be taught at a school, and when a school holds out that they do teach agriculture they fight shy of it?—I believe they do not profess to teach agriculture; it is more like agricultural chemistry.

737. Quite so; but do you not think that that feeling on the part of farmers might be modified if they simply held themselves out to teach, say, rural science without the introduction of the word "agricultural"?—I think there is the same objection to the word rural as there is to the word agriculture.

738. But do you agree that the instruction might be given without the use of any distinctive term?—Yes.

739. With regard to the other forms of teaching for young farmers, you require something of a more distinctive character—I mean to say for those who cannot prolong their education beyond the age of 16 or 17—they want a definite intermediate agricultural school rather than a secondary school with an agricultural side, something in the nature of the *écoles pratiques d'agriculture*. Have you seen any *écoles pratiques d'agriculture*?—I have gone over the school at Grignon.

740. That is a national and advanced college?—Yes.

741. Have you gone over the *écoles primaires supérieures*?—No.

742. You would extend the winter course from 6 to 20 weeks, and you think that would be practicable?—Yes.

743. That would be in the nature of a permanent winter school?—Yes.

744. Do any of your students enter for the National Diploma in Agriculture?—Very few, and the difficulty about entering for that diploma is that that examination is held just at the most important part of our teaching session, and the fact of our students' time being taken up in cramming for that examination for a few weeks beforehand, and being away, I find it not only breaks the sequence of lectures and laboratory work, but that the students cannot continue their work in the same way, and that when later on they take our own examinations they are stale and do badly.

745. In fact, your own diploma and degree are equally valuable, you say?—I think so; the degree certainly more so.

746. Can you give any reason for the superior efficiency of the northern labourer as compared with the southern; is it due to climatic reasons, or environment, or education?—As the question was put by Mr. Middleton I think there may be something to be said for the other industries being side by side with agriculture, although I believe a good deal is also due to climatic conditions. Personally, I know I can do much more work at Newcastle than I could at Reading.

747. Do you know of cases where northern labour has been imported down here and paid at local rates, and has deteriorated very much?—No; I do not know of any such case.

748. You are familiar with the memorandum of the Board of Agriculture as to agricultural research, and without committing yourself to the terms of that memorandum, do you think that a central committee in London, to collate local experiments and distribute information and enable those concerned in local work to meet and discuss that information, would be of value?—For the purposes you have mentioned, I think it would be of great value, but as to controlling the character of the experiments I think that that would be a mistake.

749. With the limitation you suggest you approve of it?—Yes.

750. Of course you are appealing strongly for further financial aid. I must remind you that you get nearly one-eighth of the total sum contributed by the Board of Agriculture, so that I would appeal to you to do all you can to enable us to get those white places covered by some institutions as well as your own?—Yes.

Mr. M. J. R. DUNSTAN, M.A., F.R.S.E., F.I.C., called and examined.

Mr. M. J. R.
Dunstan.

751. (*By the Chairman.*) You are the Principal of the South Eastern Agricultural College at Wye?—Yes.

752. The College is an old monastic foundation which was purchased, in 1893, by the Kent and Surrey County Councils, and administered under a scheme of the Charity Commissioners?—Yes.

753. The governing body consists of 21 persons?—Yes.

754. Who are nominated by the various public bodies who elect them?—Yes, the Kent County Council appoint 9, the Surrey County Council appoint 6, the Hebdomadal Council of the University of Oxford appoint 1; the Council of the Senate of the University of Cambridge appoint 1; the Senate of the University of London appoint 1; the Council of the Royal Agricultural Society of England appoint 1; the Bath and West of England Society appoint 1; and there is one hereditary Governor, Lord Winchilsea.

755. The College was opened for students in 1895?—Yes, it was opened, for teaching purposes, in 1894-1895.

756. The cost of the purchase, total alterations, equipment and additions, amounted to nearly £21,000?—Yes; that was the first bill.

757. The College has since been enlarged, in 1900-1901, to accommodate 20 more students, at a cost of £11,396; how many students have you at this moment?—

We have, actually, 110 at the present minute, of whom 54 reside in College, the remainder residing out of College. Originally the accommodation was for 30 students; in 1900-1901 it was increased to 50, and in 1905 it was increased to 54.

758. Are these students farmers' sons?—A certain proportion of them are farmers' sons, the proportion varies. At present there is about 15 to 20 per cent. who are farmers' sons. By farmers' sons I mean strictly farmers' sons.

759. What are the remainder?—They are drawn from the professional and business classes, and we have a certain number of land agents' sons.

760. And, I suppose, some sons of land owners also?—Yes, I have not included those under the name "farmers."

761. The College was enlarged further in 1903-1904 at a cost of £1,700?—Yes, that was an addition of workshops, mainly, and new accommodation for servants.

762. Again, in the year 1905-1906, extensions and additions were made, costing £6,550?—Yes.

763. Therefore the total cost of the College, excluding the stock on the farm, has been over £40,000?—Yes.

764. And the total grants made by the counties for the equipment and maintenance since 1894 have amounted to £86,000?—Yes.

Mr. M. J. R.
Dunstan.
1 May, 1907.

765. The contributions of the Board of Agriculture amounting to £8,800?—Yes, and in addition to that there is a debt on the College now of about £14,000.

766. Which you are gradually paying off?—Which we are gradually paying off on a 30 years' repayment basis.

767. In the year 1905-1906, the county contributions amounted to £5,724, the grant from the Board of Agriculture being £1,000?—Yes.

768. The annual charge on the College income for repayment of loans and interest amounts to £800?—Yes; as perhaps you are aware we differ from other colleges in this respect. Other colleges have, of course, their buildings free, and we have to pay what is practically a rent of £800 for our buildings, and that will not be paid off for 30 years, and the increased cost with regard to the outside students who do not come from the counties is partially due to that fact, that we have practically to pay rent for the College.

769. Then we come to the courses of instruction, the degree course, the diploma course and the certificate course?—Yes.

770. Perhaps you will explain to the Committee those various courses?—The degree course is in connection with the London University, of which we are a constituent school, and the matriculated students of the University who join the College can proceed as internal students to the different examinations. After having been with us a year they pass what is known as the intermediate science examination, which is a pure science examination in chemistry, botany, zoology and some optional subject. Then after a further two years they pass their final examination in agriculture, agricultural chemistry, agricultural botany, with certain subsidiary subjects such as veterinary science, bacteriology, forestry, surveying, agricultural engineering, agricultural law, or agricultural entomology.

771. I suppose some of those are optional?—They have to be certified as having attended a proper course in two of those subjects, and that consists of 60 lectures; and they are also examined in the main subjects, agriculture, agricultural chemistry and botany.

772. They are internal students of the University?—They are.

773. Do you examine the external students?—No, that is done by the external examiners of the University, but we act with those external examiners in examining the internal students.

774. Of course the degree constitutes a higher standard than the diploma?—Very much higher. The diploma course consists of a three years' course. At the end of their first year they pass examinations in agriculture, chemistry and physics, botany, geology, zoology and veterinary science. At the end of their second year they pass in book-keeping, drawing and building construction, surveying and levelling, engineering, veterinary hygiene, entomology, and in the third year, agriculture, agricultural chemistry, botany and a general paper.

775. Is there an entrance examination for those who enter for the diplomas and degrees?—Yes, there is an entrance examination for those students with regard to whose education I do not feel quite satisfied. If a student comes to the College and says he has passed the Oxford and Cambridge Local, or the London Matriculation, I accept him, but assuming he has not satisfied that standard he has to pass the entrance examination.

776. The examinations are conducted by the staff of the College?—Yes, and the external examiners as well.

777. There are external examiners?—Yes. Professor Middleton has acted for us in agriculture, Mr. Wood in agricultural chemistry, Mr. Biffen in agricultural botany, Mr. Booker in surveying, building construction, etc., and for zoology, veterinary science, engineering, and so on, we have external examiners as well.

778. Then the certificate course, that is again a lower standard?—Yes; that is more of a practical course and is rather for the farmers' sons who can only spend a shorter time at the College. He goes straight away into a course of agricultural chemistry, and he also takes a course of agricultural botany. It is intended as a good practical working course.

779. Is that all through the winter?—It is all through the session from October to July.

780. How are the students divided amongst the

different courses?—In the degree course there are five students, in the diploma 52, and the certificate course takes the remainder, that is, 42.

781. The numbers are increasing steadily?—Yes, steadily.

782. Then you have special courses in addition?—Yes.

783. You have a practical farm course?—Yes. There the students reside on one of the farms and come down to the College for lectures on agriculture, veterinary science and book-keeping. That is two years as a rule. We do not recommend less than two years.

784. The surveyor's course is also two years?—Yes.

785. The horticultural course is a three years' course?—Yes.

786. Is Forestry included?—Yes; all students take forestry work and dairying and poultry keeping and all the subsidiary industries.

787. Does the farm belong to the College?—No; it is rented.

788. It is under your management?—Under my management entirely.

789. The fees for students in college for residents in Kent and Surrey are £60; for residents in the British Empire, £120; and for foreigners, £150. You only allow ten per cent. of the total number of students to be foreigners?—That is so.

790. Are there any foreigners at present in the college?—Yes, there are six. Two from the Philippines, one from Spain, one Greek, one Dutchman, and a South American.

791. You have given us the number of students from the year 1894 onwards?—Yes.

792. Is the accommodation for the students in the college satisfactory?—Each student has a separate bed-sitting room. The accommodation is quite satisfactory, only the building has not proved altogether satisfactory; we discover now that the partition walls between the rooms are too thin.

793. The farm buildings are in good condition?—Fair.

794. I see there are a few college houses?—Yes. Six students reside in college houses; those are houses that we either rent or have bought. The accommodation in the village is very unsatisfactory; of course it is a small village, and the houses are not very good in their accommodation.

795. Your students are drawn from all classes?—Yes.

796. About 15 per cent. of those now attending the college are of the farming class?—Yes.

797. Of the 109 students 97 are intended for farming or agency work, 73 and 24 respectively, and the remainder will probably take up occupations connected with agriculture?—That is so.

798. You have followed them after they have left the college?—Yes.

799. You state that a large percentage of sons of farmers of to-day are not intending to pursue farming?—It is my experience among a good many farmers that the sons are going into business or into some profession other than farming.

800. I suppose you have also, as you are the tenant of land comprising fruit plantations and orchards, included fruit growing as part of your curriculum?—Yes, there are 10 or 11 acres of fruit ground and orchards—there are 14½ acres altogether, 7 acres of which are vegetable ground, and 7½ acres of fruit ground. 5½ acres have been planted up as forestry plantations and 7 acres with hops. The total acreage of the farms is 460 acres.

801. I suppose the experiments on the farms are watched by the farmers in the neighbourhood?—Yes. Farmers' parties come over during the summer.

802. Does the staff of the college give any lectures in the county?—A good many. They give lectures in Kent and Surrey on such subjects as science for gardeners, fruit culture, veterinary science, poultry keeping, hop growing, dairy farming, poultry work, and so on.

803. Are those lectures well attended?—Where they are well organised locally they are well attended; but where they are badly organised they are very badly attended indeed.

804. By well organised locally do you mean properly

Mr M. J. R.
Dunstan.

1 May, 1907.

advertised?—Properly advertised, and my experience is that where there is a good farmers' club, or a good horticultural society, or something of that kind to act as a nucleus, we can usually get a good audience; but where a lecture is got up, say, by the parson, who may have had a lecture on cookery last year and wants to have a change, and thinks he will have a lecture on agriculture this year, the result is that no one is consulted who is interested, and there is a very poor attendance. I know of one case where nobody at all was consulted, and there was nobody at all at the lecture, not even the clergyman who organised it. There are a great many well organised farmers' clubs in Kent—the Canterbury, and the Maidstone, and the Tunbridge Wells Farmers' Clubs, and the various agricultural associations, and at lectures organised by them one gets an audience of from 60 to 150, and you can be pretty certain that all of the men who are listening to you are connected with farming.

805. With regard to the work of the college, in addition to the teaching of students do you also train teachers?—The teachers generally take the degree course—by teachers I mean not the elementary teachers, but the higher teachers.

806. Do you hold summer courses for schoolmasters?—Yes, a summer course consisting of a fortnight.

807. Are those courses well attended?—Yes.

808. Does the Board of Education encourage the holding of those courses?—Yes. The elementary teachers' course is one of the most satisfactory with which I have had to do.

809. Is that recognised by the County Council?—Yes. Of course it only lasts a fortnight.

810. Research work in agricultural science is recognised also?—Yes.

811. I see you have a travelling farriery school?—Yes, a smith goes round the county with all the necessary apparatus, and he settles at a centre for a period of, say, three to six months, and gets most of the smiths and their assistants to attend the classes, and generally he passes through the school between 40 and 50 men.

812. The farmers apply to you for advice with regard to fruit and hop growing?—Yes.

813. That involves a personal visit to the farm of the person who seeks the advice?—Not always, but in a great many cases it does. We always try to arrange that, but of course the exigencies of time and the staff being engaged in collegiate work makes it difficult for the men to get about as much as we should like.

814. You also carry on experiments or demonstrations of methods of spraying, either at selected centres in the counties or on the college farms. I see you say "College farms." Have you more than one farm, or does that mean other farms connected with you?—There are two farms that we rent; one is called the Coldharbour Farm and the other the Silks Farm.

815. Those are both under your direction and managed by your own men?—Yes.

816. I suppose the tendency is to increase these centres?—For experiments I do not think it is, because the expense is a serious factor in carrying on experiments, and I find that the experiments we carry on in the college farm are far more satisfactory as a rule than those carried on at a distance where we do not have the trial actually under our own eyes.

817. You do not favour the increasing of centres; you would prefer to keep it under your own direct control?—I would.

818. I see you have just instituted, and it is very interesting, correspondence courses for farmers who are unable to attend the college courses?—Yes.

819. Would you just explain the principle of that to the Committee?—The idea of that is to reach farmers and young farmers who are unable to leave their farms and attend the college courses. There is a correspondence course, we will say, on manuring, a correspondence course on feeding, and a correspondence course on poultry managing, and the farmer, or whoever joins the course, pays a small fee, and he is advised in his reading as to what books or pamphlets he ought to read, and every week he is sent a digest of what he should read, and questions are asked him. He returns the answers to those questions to us, and we correct them and send him back the revised answers. That has only just been

started, and I can say nothing at present about its prospects.

820. What is the number of your correspondents?—They do not begin until next session. We shall not begin probably before August.

821. You have reason to believe, however, that it will be largely availed of?—Yes, I have reason to believe so.

822. Summer courses for schoolmasters for instruction in nature study are held?—Yes.

823. You also carry on the analyses of manures and foodstuffs for farmers?—Yes, and also the analysis of milk.

824. The survey of the soils of Kent and Surrey?—Yes.

825. The study of meteorological conditions as affecting agriculture?—A branch has only just started in that. We are at present working on the prevention of frost in the spring by means of smudge fires, and that means taking a large number of meteorological records, and temperatures in the neighbourhood of water and on different slopes and so on; and it is our intention to work with the Meteorological Society in getting some scheme of correlating meteorological observations with the observations on the growing of crops, which is a very difficult subject.

826. The expenditure on the college has increased from £5,781 in 1895, to £12,811 in 1905-6?—Yes.

827. I suppose your revenue is from the Board of Agriculture and from grants of the County Council?—Yes.

828. Horticulture is also taken up by you?—Yes.

829. I see you say two members of the staff are solely employed for research purposes?—Yes; they do not do any teaching work at all; they are entirely engaged in research, Mr. Salmon who is engaged in the prosecution of fungi and similar diseases in the country, and Mr. Gimingham, who is engaged on the soil analyses.

830. Do you consider that your staff is adequate for the requirements of the college?—It is adequate in numbers, but I do not think it is adequately provided for in salaries. What we find is that when our men get really useful to us they are generally tempted away by the prospect of a berth somewhere in the Colonies, perhaps, and we lose the men just as they are getting most useful to us. I think in the future if we are to keep our men and keep up our standard of work, we must increase our salaries. We do not pay our men enough to induce them to make a permanent stay with us.

831. I suppose you think you ought to have a higher grant in order to make that possible, and in order that you may retain your staff?—We should certainly like one. I think it would be for the good of the country generally that the men were retained in the centres in which they were trained and in which they gained their experience, because a man, for example, who has been with us three or four years, and who has learnt thoroughly the local conditions of Kent and Surrey, is perhaps offered £100 a year more in the North of England, and he leaves us in consequence. But there he has to go through the same apprenticeship, and during the first two years he is practically learning himself. It would be very satisfactory if we could keep that man ourselves.

832. You attach importance to his experience of the locality?—Undoubtedly. As a rule when a man comes to us, for the first year he is studying and learning the local conditions, and then perhaps at the end of the second year he leaves and we have to start another man in his place *de novo*.

833. I suppose you impose upon your students an obligation to do practical work?—We impose upon them an obligation to do a certain amount of practical work, but we do not try to make them what I may call second-rate labourers. We always hold that what they should learn at the college is what they would not learn on an ordinary farm, and if they want to become expert ploughmen or hedgemen, or sheep shearers, they ought to go and learn that on a farm.

834. You encourage them to do that in the summer months?—Yes. We however insist on them knowing how to set a plough, and how to alter it for different styles of working, how to shear a sheep, how to put on a horseshoe, to harness a horse for chain or shaft work,

to mow a strip of grass or lucerne, how to milk, how to make butter and cheese, and the grafting and budding of a series of fruit trees. Having satisfied us on these points then we say, "If you want to become more expert the proper place for you to learn that is on a farm."

835. (*By Lord Barnard.*) You told the Chairman that this institution is managed under a scheme of the Charity Commissioners. Can you put a copy of that scheme in?—I have not a copy of it here, but I will send it to you.

836. How came the Charity Commissioners to make a scheme for this institution. Am I right in assuming that it has got an endowment?—There was an endowment, undoubtedly, but there is no endowment now.

837. What has become of it?—I do not know what has become of it.

838. To whom do you pay this £800 a year?—To the Prudential Insurance Company, from whom we borrowed the money.

839. I presume this is a charity allowance—it has been sunk in buildings or site, or something?—The conditions are these, that when the college first came to the County Council it was in a very bad state of repair, and to put it in proper repair would have cost a matter of £3,000. The local education authority could not afford to do that, and so an arrangement was made whereby they handed the buildings over to the County Council.

840-1. You mentioned the subject of meteorology—do you consider that is a subject of value in a course of agricultural instruction?—Perhaps of interest only, at present.

842. Do you think it could be made a ground for claiming additional support from the Government?—I do not know enough of the subject myself, I am afraid, to say. I think there are great possibilities in it, but I do not know for certain whether we shall get anything practical out of it. In this particular instance I referred to—smudge fires—and I think there is much to be learnt.

843. In your opinion, is it a subject that will be taken up elsewhere?—I do not think it will be.

844. The degree course is four years. Is that a regulation of your college?—Yes, it is a necessity. Matriculation is taken in the first year; then there is the intermediate, and in two years more the degree is taken.

845. You do not, of course, know the evidence that has been given from Newcastle and also the evidence that has been given here from Cambridge?—No.

846. You are the third head of an institution of this kind that has appeared before us, and as far as I can judge the requirements in each case are different. Do you think there would be any advantage if there were a uniform system of degree courses and diploma courses?—I think if the uniform system took account of a high standard it would be a good thing. We do not want to lower the standard of degrees in the country.

847. All the three colleges that have come before us have got three different systems?—That is a thing rather for the Universities than for the colleges. The Universities grant the degree.

848. With regard to the subject of research, do you consider research is of great value?—Of great value in itself, and of great value to a teacher too; I hold that every teacher should be an investigator.

849. I see you have stated that the research work necessitates the employment of two members of the staff solely for research purposes?—Yes.

850. The research work is one of the financial necessities of your college?—Certainly.

851. Do you publish the result of your research work?—Yes; it is published in this journal, which is our last journal.

852. Are those made available to farmers and others interested in agriculture in the two counties?—Yes; this journal is sent to any farmer in Kent and Surrey gratuitously who cares to apply for it, and it is forwarded on payment to outsiders.

853. As to analyses, you know of course the law on the subject under the Fertilisers Act?—Yes.

854. Do you think it is desirable that an institution such as yours should do this work rather than it should be done by the County Council analyst?—I would rather

not undertake the work, because I do not think the presence of a member of a college staff in a law court is advisable at all.

855. Some of your students, you have told us, are the sons of farmers, and a large proportion of them take up actual farming work?—Yes.

856. Do you consider that it is desirable that a college such as this should provide an education for others more or less indirectly connected with agriculture in addition to actual farmers, such as teachers and people engaged in other trades, for instance the milk trade, millers, maltsters, land agents, and so on?—I think so. I think the education of all the people engaged in the agricultural industry is a benefit to the industry.

857. And even that it is desirable that we should train men in England who should ultimately go to the colonies and abroad?—I certainly do not think it is desirable, but I think it is unavoidable.

858. A certain number of your students do go abroad?—I am afraid they do.

859. Probably the best of them?—Probably; I have sent six men to the Indian Agricultural Department recently. They get £300 a year out there, whereas at home they would only get £100.

860. You say you find that teachers, because you cannot pay them adequate salaries, leave you. Do you think that is very general?—I think it is; it certainly was the case before I came to Wye.

861. It is so in the case of others of those centres that we see displayed on that map there; it does not apply to yourself only.—That is so.

862. (*By Lord Belper.*) With regard to the question Lord Barnard asked you, whether it was desirable to educate the people who are not actually farmers' sons to go abroad or to the Colonies, is it not very essential that in a first-class agricultural college you should have a number of students coming who seek the very highest possible education in the particular subject that they come for, and that if you are to keep your college up to the standard up to which you wish to keep it, it is desirable to induce men to come there who will require the highest possible education?—Undoubtedly.

863. And qualify themselves as teachers and university men who will take a very high place after they leave your college?—Undoubtedly.

864. You cannot keep your college up to the standard unless you do that?—No.

865. Before you came to Wye you were connected with another institution of the same sort, the Midland Agricultural and Dairy College?—I was.

866. You have also had large experience of agriculture in the county of Nottingham; you had a very large experience amongst the farmers there, and you have also been co-opted as agricultural member or the Education Committee?—Yes.

867. I mention that to show that you have very considerable experience in educational work of this character in different parts of the country.—Yes.

868. With regard to one question that was asked you as to the salaries, which you think ought to be higher, and for which you would like a higher Government grant, should you also say that it was necessarily desirable that that grant should be assessed according to the amount of salaries that are paid in a particular institution?—Certainly not, I should say, because that would simply be a means of screwing up the salary list—if the grant were decided upon the amount of the salary list.

869. I suppose also the number of institutions that are at present established exist under very different conditions?—Very different.

870. Some are connected with wealthy universities or university colleges, others are more agricultural, and therefore the salaries paid to the members of the staff would not necessarily be a guide to the standard of the work that was being done at those institutions?—No. If you take the case of an agricultural college such as ourselves, we have to provide for the whole of our chemical and botanical teaching from the very beginning, and if you take the case of an agricultural department of a university college the whole of the elementary chemical teaching is done by the resident staff, and the whole of the elementary botanical teaching is done in the same way. Our expenses are very much greater, because we have to teach the subjects which in a university college are taught by the ordinary staff,

Mr. M. J. R.
Dunstan.

1 May, 1907.

Mr. M. J. R.
Dunstan.
1 May, 1907.

and the many other sides that the university college takes up. I do not think it would be wise to base the grant on the salaries, although I know I am arguing against myself, because our own salary list amounts to about 30 per cent. of our expenditure, but still I do not think it would be wise to base the grant to a college on the amount of the salaries paid.

871. The object of a grant must be to induce the particular institution, the college, or whatever it is, to get the highest state of efficiency possible in their teaching?—Yes.

872. There may be other things which point to the state of efficiency as well as the amount that is given in salaries?—Quite so.

873. I think Lord Barnard has asked you a point with regard to research work. You think it essential that a college which is to take a first position should do as much research work as they can?—Absolutely essential. I am perfectly convinced of that.

874. That is a thing which ought to be encouraged by a Government grant, you think, quite apart from the amount of money that is spent upon actual teaching?—Yes, the only thing I would say with regard to research is this, that I would rather that the grant were made for research purposes to the individual who conducts the research for materials only. I do not like a grant being given to an institution for research purposes that may not be applied to research purposes. Supposing I applied to the Council for a grant for a specific purpose, I ought then to provide vouchers to the Council showing I had laid out the amount of that grant in actual materials and apparatus for the work. I do not like a grant which is made to an institution to be swallowed up in the general expenses of that institution. If one applies for

a grant to the Royal Society one has to produce vouchers showing that one has expended the money in the actual materials and apparatus: the researcher gives his time.

875. I think you said you do some work in forestry?—Yes.

876. That is part of your courses?—Yes.

877. Do you get any grant from the Agricultural Department for forestry?—Not at present.

878. I believe there are only two grants for forestry given. You think if a larger sum was available for that purpose you would put in some claim for it?—I think we should.

879. There is one point you mentioned about not increasing the centres for experimental work that was done outside. I suppose it is necessary to have experimental centres in order to give an interest to the farmers living in the immediate locality?—Yes, I regard them as very useful in getting into touch with farmers, but I do not place very much value on them as a means of obtaining scientific results.

880. I take it that one of the first objects of these experimental centres is to get into direct touch with the farmers, and unless you adopt some means of that kind you cannot get hold of them, and get them to interest themselves in the work you are doing unless you bring them into direct touch with the land?—Yes, quite so, but I would prefer to call them demonstrations and not experiments.

881. (*By the Chairman.*) I understand you are prepared to come next week, because there are some members of the Committee who are not here, who would like to put some questions to you?—Yes.

Mr. ALFRED AMOS, called and examined.

Mr. A. Amos.

882. (*By the Chairman.*) You are a farmer of Wye, and are one of those who, originally, about the year 1890, urged on the Kent County Council the formation of the South Eastern Agricultural College at Wye?—I was. I went up with Lord Winchelsea to Maidstone and endeavoured to get them to start it.

883. You felt it would be a great advantage to the counties to have such an institution?—Well, I cannot say that I thought so at that time; but I thought at the time that it would be a good thing for Wye to have the college there, and so I went up and supported Lord Winchelsea. In fact, at that time I was rather a disbeliever in technical education for farmers.

884. Your have since altered your opinion?—Yes, I have. The more I have seen of it the more I have appreciated it.

885. You are now a governor of the college?—Yes.

886. Perhaps you would tell the Committee what, in your opinion, is the chief value of the work which is done at the college for farmers?—I think the farmer who sends his son to the college, sends him there to get what he can inside the college—the sciences that are taught inside the college, and not so much for the practical work that they teach on the farm.

887. You think that the analyses of manures and feeding-stuffs, and so on, are of practical value to the farmer?—Certainly. They enable him to read and understand the analyses that the dealers in manures and feeding-stuffs hand to him when he is buying. Very often an analysis of feeding-stuffs is placed in a farmer's hands and he does not understand it without having been through a chemistry course. He would then be able to understand it and to know whether it was likely to be of value or not.

888. You think botanical instruction is important?—Yes, I think it is, because I know it is a good deal of use to me personally. I have had much valuable information from the professors who have come to my farm, which is close by the college, and they have put me right in a good many respects when I have been working on absolutely wrong lines.

889. You think veterinary instruction is also of importance?—Yes, I think that is very important too.

I know my own losses from want of veterinary knowledge have been very great.

890. You think the practical instruction which is given at the college is proceeding on the right lines?—Yes, I think it is. If I taught practical agriculture, probably I should teach it a little differently to what they do there; but I have just been appointed Chairman of the Farm Committee there, and I hope to get it a little more on the lines of the practical agriculturists in the county, so that they will not be able to criticise the management of it quite so much as they sometimes do.

891. You are of opinion that the gentlemen who teach at the college have something to learn from the practical farmers?—Yes; I think blending the two together does a lot of good.

892. We have had evidence with regard to the lectures given outside the college—lectures given in the rural districts. In some cases these lectures appear to have succeeded and in others they have been a failure. In your opinion, what are the conditions of success which you would indicate with regard to those lectures?—They want organising where they are to be held, and it depends a great deal on the secretary in the district whether he looks around and gets people to come to them or not. Farmers are very diffident about coming and hearing a lecture unless someone takes a little interest in it and says to him, "Will you come along this evening and hear a lecture?" but if nobody approaches him he is apt to let it go by without going to it.

893. You think these lectures should be conducted rather in the colloquial form—that it should not be like a sermon, but more of a colloquial character?—I do not quite understand what you mean by "colloquial."

894. I mean that the lecturer should talk to his audience, and that there should be an exchange of opinions?—Where they go to farmers' clubs and such places that is the way the lectures are conducted. The lecturer generally introduces the subject and addresses the meeting, and then questions are invited and a discussion follows, which is very useful.

895. That is the way in which you think they ought to be conducted?—Yes.

896. With first of all an introductory speech and then

a conversation on the subjects mentioned in the speech?—Yes; and the discussion is very often more valuable than the actual paper, because the farmers get at once to the points they want to find out.

897. (*By Lord Belper.*) That is the way they are usually conducted, is it not, in your county?—Yes, where lecturers go to the farmers' clubs.

898. (*By the Chairman.*) You think those lectures ought to be organised by farmers' clubs and societies, and then, of course, the members would take an interest in them?—You must have some sort of society to do the work of getting the people together, otherwise there is scarcely any attendance.

899. Is the opinion of farmers who have had sons at the college satisfactory?—I think that is most satisfactory. I persuaded my brother to send two of his sons there, and he is very pleased with the result, and I have also persuaded several farmers who are neighbours of mine to send their sons, and they are all very pleased. I have also persuaded some of the students that I know to go back to a farm after they leave the college; and what they have learned at the college has done them a great deal of good—their minds get broadened.

900. Your opinion as to the value of the special information which can be obtained at the college is favourable?—Yes.

901. You think that the advice which can be got at the college is of practical value?—Certainly.

902. Have you any observation to offer with regard to the special work conducted at the college and the details of that special work?—Do you mean outside the college?

903. Yes?—Of course farming operations are carried on and they experiment in feeding cattle and sheep, and there are pigs and bees and poultry, and experiments with regard to the different kinds of wheat and different ways of manuring. Those are all useful. Of course they must be carried out very carefully, otherwise they are misleading. It is very essential that those experiments should be carried out absolutely accurately, otherwise it is very easy to mislead farmers, and it would do them more harm than good.

904. You think it would be advisable to increase the number of those who go about the counties and meet the farmers upon their own farms, and investigate special points on the farms?—I do; I think that a lot of good is done when a scientific man meets the farmers on the spot. The farmer may have a disease in a plant, or he may have an animal that is unwell, and there may be different things where the scientific man can put the farmer right on the spot. I think when the scientific man and the practical man mix their knowledge together it is useful to the practical man a great deal more so than it would be if he were not able to see the thing actually demonstrated.

905. You approve of the summer courses being held for elementary teachers?—Certainly, they are very well attended. The schoolmasters are very pleased to go, and they are very keen on having the opportunity of benefiting by the professors' knowledge; I think it does them a lot of good, because they go about the country not nearly so ignorant on those subjects as they were before.

906. The result is that they can impart some elementary agricultural instruction at their schools?—Certainly.

907. (*By Lord Barnard.*) Am I right in thinking that it is your opinion that, apart from the question of the students and the instruction given to them, colleges such as this are of very great value to practical farmers?—Yes, I think that is so if you can get the farmers to take an interest in them, but they are rather shy of them. If you can only get them to take an interest in them they will get a lot of good from the colleges.

908. Your own personal experience is that it has been of value to you, and you have spread that experience amongst others?—Yes. I have impressed them with the advantage of sending their sons there as much as I can.

909. You have also told us that you are spreading that knowledge by inducing them to ask some of the skilled professional staff of the college to meet them on their own farms?—No, the staff are not able to that. What we want to do is we want some of the professors to take up special subjects, such as fruit and hops, and

to go round the country teaching the farmers, but the staff of the college are busily engaged in teaching just now.

910. You think it is a subject on which knowledge should be diffused?—Yes, the professors have many enquiries addressed to them, and they write hundreds of letters in the course of the year on different subjects.

911. Do you think the elementary teachers appreciate the course also?—Yes, they appreciate them very much and it is very valuable to the counties that the teachers should get that instruction, and should impart it.

912. Are the lectures given gratuitously or is there a charge made?—The expenses of the professors are paid for coming down, and they are paid so much a lecture. I think their fees are paid by the County Council; I do not think there is any charge to the farmer.

913. You have told us that you would have been glad to have had greater knowledge of veterinary science yourself, but are you aware that the profession of veterinary surgeons are not altogether in favour of the science being taught in the colleges?—There is a little jealousy, I know, but the veterinary professor that we have at the college does not take private practice. He acts more as a consulting veterinary. Some farmers go and consult him on different things, but as regards students, of course it must help them considerably.

914. You do not think that amongst the multiplicity of other things that they learn that you could ever turn a student of this college into a veterinary surgeon?—No, and it is not desirable that he should be a veterinary surgeon. Of course he has not the time to go into it as minutely as that, but there are a great many things that he might learn that would be very valuable to him, and would save him when he started farming from all sorts of mistakes and losses.

915. You are of opinion that all they need, as I heard a veterinary surgeon the other day describe it, is to be able to give first aid?—Yes, that is it.

916. (*By Lord Belper.*) You say the professors answer an enormous number of letters from the college. They give practical advice to the farmers if they chose to write and ask them for it, do they not?—Yes, they give the best advice they can.

917. Supposing a farmer gets into a difficulty for some special reason and he writes to the college, they will very likely be able to tell him what has gone wrong, and he will probably be able to put it right?—Exactly.

918. That sort of communication with the farmers brings the farmers to understand the great benefit that some scientific knowledge may be to farmers?—Certainly.

919. (*By Mr Latham.*) There was one remark made by Mr. Dunstan that I rather took offence at. He said he did not think it was any good making students second-class labourers. My impression is that if I personally had not gone through my work from the beginning, and seen every one of the young men working as labourers, that I should never have been half as good a man as I am at the present time. Do you think there is any harm in teaching a young man to work from the bottom, and do you consider he is ever as good a farmer if he does not possess that knowledge?—Well, I was brought up to it myself, but I may say that I have never ploughed an acre of land in my life, and I have never sheared a sheep in my life, but I very often do the judging at ploughing matches and at sheep shearing matches, and I think I am able to tell when it is done properly. I would suggest that if you wish to teach the young men manual labour, you should do so on a farm, or have a professor of labour at a college, a plan that personally I do not think would be workable, for it takes years for a man to become an efficient labourer. I do not think it is really part of the work of a college to teach bodily labour.

920. No, I do not think it is, but it would not be right to call him a second-class labourer because he knew all about it. The great secret of the success of this country was, in my opinion, because of the old-fashioned system of apprentices to the different trades, which system seems to have decayed somewhat. With regard to the courses for elementary school teachers, are you of opinion that they might be extended?—As it is, the professors spend part of their summer holidays in instructing the teachers, and it would cut their vacation very short if they had to do more than they are doing at present.

Mr.
A. Amos.
1 May, 1907.

Mr.
A. Amos.
1 May, 1907.

921. Is there any provision for the elementary teachers teaching what they have learnt at these summer courses in their schools?—I do not know.

922. The Board of Education, I suppose, do not value that very much, then?—I am unable to say.

923. Is your opinion of this college supported generally by farmers in the neighbourhood?—I think so. I could mention several farmers who could come and tell you of the value they have got by sending their sons to the college.

924. Does your view represent the view of the minimum or the maximum?—I do not know one who regrets having sent his son to the college.

925. Do you think the sons of farmers are following their fathers' occupations more or less now than they used to do?—I think it is about normal.

926. Do you think there are as many sons of farmers going to be farmers now as there used to be, and not going into other trades?—Yes, I think so. It is not so in my own case, but I think it is so generally.

927. With regard to these lectures that there has been a very great deal of fun made of, do you find that the lecturers generally know pretty well what they are talking about?—In their special subjects, yes.

928. It is an unfortunate thing that men sometimes do talk about what they know nothing?—It is quite possible.

929. There is one remark I very much wish to call your attention to. In Mr. Dunstan's evidence he spoke about preferring to conduct the experiments at home. Are not your ideas rather against what he said. I should have thought you wanted experiments all over the country in order to treat the different classes of soil?—I think experiments are carried on all over the country.

930. He said no?—They are extending them out a bit. They have carried them on for several years now, and then they compare the results with other districts so as not to go entirely by what happens in the one district.

931. One other remark about veterinary instruction which Lord Barnard put to you. Is there any feeling in your district that the teaching of veterinary science in the college is doing the veterinary profession any harm?—I do not think it is doing the veterinary profession any harm. It is really wanted more for trivial cases where a man would not call in a veterinary surgeon. If the farmer knew how to treat his stock himself he would cure it, and it might take work from the veterinary surgeon; but, at the same time, if the farmer had a slight knowledge when the veterinary surgeon came, and said that different things wanted to be done to the animals the farmer with his little veterinary knowledge would be able to carry out his instructions very much easier.

932. Can you give us the line that the veterinary instruction takes?—No. I do not know about the lines. The students are all taught in the way of lectures.

933. You consider that instruction very valuable to the farmer?—I think so.

934. (By Lord Barnard.) Lord Moreton points out to me, and I think it is what Mr. Dunstan meant, that we must draw a distinction between experiments and demonstrations. I suppose Mr. Dunstan meant that experiments could be better carried on at the college, but you could give demonstrations better about the country?—Yes. I think experiments carried on about the country are not so reliable as those carried on on the farm, because they are not carried on under the eye of the professors, and something might happen which they are not aware of, and it might be very misleading.

935. (By Lord Moreton.) Therefore, you would consider the wise course would be to have all the important experiments carried out, so to speak, at the college; and to repeat them you might have a demonstration away from home?—Yes.

936. (By Mr. Latham.) The difficulty is that a great

deal of the experiments would apply to certain soils, and they could never be carried on at the one spot?—That might be so, but there are many that are carried on at the college and away too.

937. (By Mr. Medd.) Mr. Latham suggested to you that the teachers who attend the college might have a more extended training. Are you aware that in some counties they attend every Saturday throughout the year—in Wiltshire, for instance, in Cheshire, in Derbyshire and in Middlesex. The teachers there attend for instruction every Saturday throughout the year. Have you heard of that?—No, I have not heard of that; but that would be very difficult where you have a lot of students at the college at the same time.

938. That difficulty is not felt at the Holmes Chapel College or the school at Dauntsey, and I was going to ask you whether, as a Governor of the Wye College, you might consider whether it enables the teachers to study those things at every season of the year—nature and natural life. That would lie with you and the governing body and the principal of the staff?—It would do a good deal of good I should think.

939. You have found that the result of this training is of benefit to the village schools in Kent?—I have not found it personally, but it must be so, I should think.

940. You do not happen to have visited the Chislehurst Road School at Orpington and the Orlestone School do you?—No.

941. They happen to be two of the very best in the world. They are visited by people from Japan, and from the continent, and different parts of the world, and they might be taken as models for the rest of England, and they are in your own county?—I have not visited them.

942. Have you happened when travelling abroad to have seen any type of foreign school which if introduced in this country might be useful to farmers' sons?—I have never travelled abroad.

943. Have you any views as to what should be offered to the small farmers' sons and the labourers?—The small farmers find it more difficult to spare their sons than the larger class of farmers do.

944. What would you offer to the man who cannot afford to send his son to such a college as Wye, but who really wants his son to get some benefit from scientific knowledge?—If he can get a scholarship he can go to the college free.

945. That of course entails a three years' absence?—Two years.

946. You have no suggestion to make as to what might be brought to his own doors in the way of continuation classes?—No, I have not.

947. Do you come in contact at all with the official correspondents of the Board of Agriculture?—No, I do not.

948. Do you think it would be of service to you, as a farmer, to have a permanent consultative Committee with representatives in London, associated with the Board of Agriculture, to meet periodically and discuss agricultural and educational questions?—I think that would be a good thing.

949. Thank you very much, that is all I have to ask you?—I might say with regard to the schoolmasters, that when they first came to the college, they seemed to come with the idea that there was nothing to learn, but after they had been there and gone through their fortnight, they went away so pleased that they are all anxious to come every year now.

950. I may say that Mr. A. D. Hall invited me to hear his inaugural lecture, and I was greatly struck by his simple treatment of the subject and the keen interest of the teachers. I know how valuable his example has been, not only to Kent, but to the whole of England. You initiated this method of training teachers, and you deserve the greatest credit for it?—It must be of great benefit.

THIRD DAY.

Thursday, May 2nd, 1907.

PRESENT:

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

The Lord BELPER.

Lord MORETON.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. J. H. NICHOLAS, M.A., Secretary of the Essex Education Committee, called and examined.

951. (*By the Chairman.*) You are Secretary to the Essex Education Committee?—Yes.

952. Will you kindly explain to this Committee the origin and nature of your work at Chelmsford?—I think I may say that it began when the Customs and Excise Duties, called the "whisky money," were handed over to the County Council. Previous to that very little had been done in the way of agricultural education, except, perhaps, at shows. When the "whisky money" was handed over, the County Council appointed a Committee, and passed a resolution directing the whole of it to be appropriated to education. There were good representative farmers upon that Committee, and agricultural education was one of the matters it took up. That was in 1892. Shortly afterwards the Committee, upon the Report of a Sub-Committee, considered it necessary to appoint two experts, one for agricultural chemistry, and the other for biology. These two men were carefully selected, namely, Mr. Dymond and Mr. Houston. They set to work at once to find out the best way in which agricultural instruction could be provided, and they began by giving lectures. Mr. Dymond is a chemist, and he soon got on to agricultural chemistry. By means of meetings with farmers and by local lectures, a development was made upon the lines of establishing a kind of central institution. As the matter was not sufficiently advanced to justify the erection of a new building, we bought an old grammar school, and in it one room was appropriated for chemistry under Mr. Dymond, and the other for biology under Mr. Houston. That was the beginning of our institution. In the other parts of the building we had a few offices for the staff, &c. The work of these two men proved successful, and was much appreciated by farmers and gardeners. Mr. Dymond chiefly directed his attention to farming subjects, and Mr. Houston made a special feature of gardening and botany. That is how the matter got to be subdivided into two—one section, the agricultural, with Mr. Dymond at its head, for farmers; and the other, the biological, under Mr. Houston. Special classes were started, and very soon we found there was not sufficient room in the building for the classes. In 1896 we built a small biological laboratory at a cost of about £700. As the classes did so well we appointed some assistants to help the two men I have named in their different departments, and in 1903 we were able to erect the present Technical Laboratories, which were opened by Lord Onslow. That is the present state as to the building. You will find particulars of the work done on page 8 of our Higher Education Report for 1906, which has been placed before your Committee. One wing of the building includes rooms set apart for instruction in agriculture; that instruction consists of a nine weeks' course for young farmers in winter. We found as the result of experience that in our county, at any rate, the thing would work much better if we took the young men intending to become farmers at a time when they could be spared for a nine weeks' course, leaving them the rest of the year to work on their farms, instead of taking them away from that work for a whole twelve months at a time. They are thus kept in close touch with farm work, and in quiet times they came to our laboratories to get special instruction bearing upon agriculture dealing with such subjects as chemistry, stock feeding, manures and dairy work. We felt that by helping these

young men in this way we should be improving the type of those who would eventually become the farmers in the county. The nine weeks' courses to which I have referred have been exceedingly successful. Last year we had about 20 young farmers attending, and there is reason to be pleased with the type of young men who come in. In the basement we have the dairy school. At one time we had a travelling dairy, but having opened the eyes of the people by its help to the importance of dairy farming, we thought the matter could be worked at less expense, and perhaps with better effect, in a central institution where we could deal with bacteriology as well as dairy work, cheese-making, &c. We get a constant supply of pupils who come into the dairy school for courses ranging from two to six weeks.

953. (*Chairman.*) Women?—Chiefly women, but I counted four men, practical farmers, taking the present course. A great deal of cheese of all kinds is made there. It may interest the Committee to know that last year we made one ton of Derby cheese, two tons and a half of Cheddar cheese, two hundredweights of Wensleydale, and one hundredweight of Stilton, as well as a small supply of Cleveland and various soft cheeses. The kind of cheese turned out depends on its treatment. Ordinary dairy work, such as treating the milk and making the butter, is, of course, part of the curriculum of the dairy school. On the other side of our building there is a block devoted entirely to biology, which includes botany for the horticultural students who come to the school garden. They spend the morning in that room for instruction in botany, and in the afternoon work in the school garden. At first we had simply three weeks' courses and then let the students go away, but we thought that too short a time; and eventually settled to give three three-weeks' courses and one four-weeks' course, which completed the year's work. Young gardeners came up and took these courses. The school garden, consisting of three acres of land, is about a quarter of an hour's walk from the laboratories. We put up a shed there for tools and potting, also a greenhouse where practical instruction is given to the students. Since the passing of the Act under which education was handed over to the County Council, we have been making a strong effort to get elementary school teachers in for vacation-courses, with a view to their giving instruction in horticulture in the elementary schools. We have also school teachers coming in to Saturday classes at the Institution, and we have been able to start a large number of school gardens in the county. Their number is increasing rapidly. There were some special agricultural classes on Wednesdays, but as a rule we find that young farmers cannot so well be spared in the middle of the week, and consequently not much has been done in that matter. On Fridays—the market day—there have been market day lectures given—lectures for farmers upon all kinds of subjects bearing upon agriculture. These are not necessarily given by our staff; in fact, only a few have been given by our staff. They are given by expert farmers and others who come down to lecture on special farming matters. These lectures, usually limited to half an hour, have been exceedingly well attended and, I believe, highly appreciated. A member of my Committee, Mr. Goodchild, who is here, will be able to tell you what is the opinion of himself and his colleagues as to the effect of such lectures

Mr. J. H.
Nicholas.

2 May, 1907.

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Mr. J. H.
Nicholas.
2 May, 1907.

953c upon the farmers. In addition to all that, we have agricultural analysis. It was found very desirable to give farmers some practical instruction in dealing with soils, and we arranged to have analysed for them various manures, with a view to seeing what should be applied to particular soils. The foods supplied, and the milk and the seeds, are also tested for them on their request; in fact, with regard to all matters of practical benefit to them, we try to meet their wants. These analyses have greatly increased. Farmers have got to appreciate them, and they come to get advice as to the best mode of dealing with a certain soil, and whether certain manures are suitable. The best advice that can be given is given by our staff. We have also had field experiments with the double object of illustrating the principles of manuring, and investigating the manures best adapted for permanent pasture and tillage crops on Essex soil. The soils vary very much in different localities, and we have made a large number of experiments right through the county. These are all worked from the central laboratory with the help of the farmers in the locality, who are particularly keen in this matter. After the results are ascertained field meetings are held, and the farmers are much interested in the matter. We have considerable field meetings all over the county with regard to different experiments, which are explained by the staff. We expect the staff, of course, to learn some things from the farmers, just as the farmers learn from the staff. At all events, the farmers express their opinions, and often, I believe, great benefit is derived. At various times publications bearing upon interesting matters connected with agriculture are issued by us for the benefit of the farmers. I have some of them here, but I need scarcely trouble your Committee with them. I may perhaps mention the circumstance that we had an inundation of the sea in a certain part of the county, which ruined hundreds of acres of land, and the practical question was how to deal with it. Our staff were called in and gave the best advice they could, guided by their knowledge of what had been done in other places, and I hope this was of use to some of the farmers. I have had enquiries from a distance, and even from so far as Fiji, for particulars desired by persons who have heard of our experiments.

953d There is another feature which I would like to mention. It is that each year the staff arrange a visit to interesting places for farmers. Once they took a party to Holland, and as there is much dairying done in Essex the party of visitors were much interested in seeing how milk was dealt with in Holland. At another time one of our parties went to Hungary, which was particularly interesting. We found that the Hungarians devote a great deal of their public interest to farming. Indeed, one of the chief impressions left upon my mind was that the Hungarians were doing everything for agriculture, whilst we in England were doing practically nothing. Last year we made a visit to Scotland, and we are arranging a visit to the North of England this year. Our farmers are keen to go, and I think these visits have a good influence generally. With regard to farm labourers, it has been rather difficult to find suitable matters in which they really take a keen interest. We have evening classes for young fellows, and we find that ploughing instruction has been taken up successfully. Perhaps half a dozen lessons are given at a centre for young men on the farms, and sometimes for older men as well. That has been done at a large number of centres, and a particularly pretty sight it is to see the competition on a fine day with all the horses in the field. That has been much appreciated. We have also tried thatching and stacking, and to a certain extent it has been successful, but we have not done much with this up to the present time. Woodwork is one of the things we have found useful, rough carpentering to make the agricultural labourer a handy man. They have been taught to make such things as ladders and milking-stools, perhaps of a somewhat rough character, but that work has been well taken up, and I think has been very useful.

953g 954. (By Lord Moreton.) Would you give a definition of woodwork?—I mean rough carpentry and the use of tools. The field experiments in 1906 dealt with varieties of wheat, varieties of mangolds, the effect of manures on mangolds, manuring of maize, manuring of picking peas, the effects of a second dressing of basic slag to London clay grass land, &c. With regard to our publications, if any member of the Committee would like to see them, I shall be glad to furnish copies.

955. (By the Chairman.) How many centres have you in the county?—There is only one central establishment and that is at Chelmsford, from which our staff go out to other places to lecture, to visit farms, or to supervise the experiments. With regard to practical horticulture the

gardener goes out to various districts lecturing and teaching during the winter upon the treatment of trees and gardens. With regard to the subject of expense: that has been rather a troublesome point with us. At the present time our central Institution costs us about £3,000 a year, without reckoning anything for interest on capital or for rates. We have applied to the Board of Agriculture for funds on several occasions, but I understand that, although willing, they were unable to find means to help us. I have, however, to thank Mr. Brooke-Hunt for his valuable help all the way through. He has been down often to see us, and whenever we wanted his advice he has always been particularly good in giving it, and in helping us to the best of his ability with his knowledge of how agricultural matters are carried on in other counties. Hitherto we have had but little in money from the Board of Agriculture. If this had been an engineering school, or a school of art, or some other grant-earning school under the Board of Education, we should probably have been receiving a £1,000 a year from public funds. But the matter was in an experimental stage, and we thought it better in some respects that we should remain more independent and pay the piper so far as we could, and in that sense we have kept the thing in our own hands. The two excellent men with whom we started have now been taken from us, one by the Board of Education, Mr. Dymond, as their Inspector in Agriculture; and the other Mr. Houston, is now in Ireland. The chief farmers have shown themselves willing to help us, and we thought it better to work out our own salvation in our own way, even if it cost us a little more; and that is what we have done. Two years ago the Board of Agriculture wrote us a sympathetic letter, and added that out of their grant for such a purpose they had only a balance left of £200 if we cared to accept it. I thought we had better do so. This year we had that £200, but as we found that our Instructor had been transferred to the Board of Education, we thought we might perhaps with more safety place ourselves, as an experiment, under that Board. We did so, and we received £400 from the Board of Education, which brings our income from Government sources up to £600; but we have had a notice from the Board of Education that they have done this rather hesitatingly, and that as they found we received a grant from the Board of Agriculture, they did not think they could continue theirs so as to make grants from two Departments, but that if we made a special application it would be considered. We have made a special application, but I do not yet know what will come from it.

956. How was the money provided for the building?—By the County Council from the "whisky money."

957. Was a loan raised?—No, we accumulated the first year's money, and were then able by a little manipulation to do without a loan.

958. You paid it out of revenue?—Yes.

959. Then practically, with the exception of the two grants you have mentioned, you depend upon the money given you by the County Council?—Yes.

960. Are the lectures for farmers well attended?—They have been well attended. I should say that as a rule we have had probably 30 or 40 farmers attending.

961. Are these lectures mostly of a practical character?—Yes; entirely. I can give you as an example our course for 1905-6; it is as follows:—

Oct. 6.—"The Breeding and Rearing of a Dairy Herd and the Value of a Milk Record," by Charles Marshall, Secretary of the Northumberland and Durham Dairy and Tenant Farmers' Association.

Oct. 13.—"Concerning Sheep and Essex," by W. J. Malden, Surbiton.

Oct. 20.—"Pigs, Past and Present," by Sanders Spencer, Holywell Manor, St. Ives, Hunts.

Oct. 27.—"The Farm Orchard; its Place and Management," by C. Wakely.

Nov. 3.—"The Production of Milk," by F. J. Lloyd, F.C.S., F.I.C., Consulting Analytical Chemist and Dairy Bacteriologist to the British Dairy Farmers' Association.

Nov. 10.—"The Advantages of Poultry Keeping to the British Farmer," by W. F. Snell, Dairy and Poultry Farmer and Instructor in Poultry Keeping, Yeovil.

Nov. 17. "Clean Milk and how to Produce It," by J. C. Thresh, M.D., D.Sc., F.I.C., Medical Officer of Health for Essex.

Nov. 24.—"Surplus Milk," by B. W. Bull.

Dec. 1.—"The Field Culture of the Potato," by Alec Steel, Prittlewell.

Mr. J. H.
Nicholas.
2 May, 1907.

- Dec. 8.—“England as a Producer of Sugar from Home-grown Sugar Beetroot,” by Sigmund Stein, Sugar Expert, Liverpool.
- Dec. 15.—“Some Agricultural Facts and Figures,” by R.H. Row, Board of Agriculture and Fisheries.
- Feb. 9.—“Basic Slag as Phosphatic Manure for Roots,” by W. A. Cox, of the Agricultural Department, Chemical Works, late H. and E. Albert.
- Feb. 10.—“Sheep; the Management of the Flock,” by Fred. Smith, Woodbridge.
- Feb. 16.—“Economy in Manuring,” by Professor Douglas A. Gilchrist, M.Sc., F.R.S.E., Armstrong College, Newcastle-upon-Tyne.
- Feb. 24.—“Meteorology in its Relation to Agriculture,” by Wm. Marriott, of the Royal Meteorological Society.
- Mar. 3.—“Mendel’s Principles of Heredity with some Applications,” by R. C. Punnett, M.A., Gonville and Caius College, Cambridge.
- Mar. 10.—“Wheat Growing,” by Wilson Marriage, J.P., C.A.
- Mar. 17.—“The Growing of Barley,” by C. N. Brooks, C.C., Mistley.
- Mar. 24.—“The Manuring of the Mangold Crop,” by Dr. Bernard Dyer, F.I.C.
- Mar. 31.—“The Farmer’s Pig,” by Sanders Spencer, Holywell Manor, St. Ives, Hunts.

962. Have any experiments been made with regard to beetroot cultivation?—Yes, considerable experiments. I produce and hand in a record of them.

963. Perhaps you will explain to the Committee about the meetings of gardeners to which you refer?—These meetings are of a somewhat recent date. They are held in Chelmsford on Friday evenings. They are taken charge of by our biological department and the gardeners are invited to come in for discussion upon certain branches of their work, such as the best potatoes for their district, or the best way of growing any particular kind of crop, or different kinds of flowers. They bring in specimens and there is a discussion, and the gardeners themselves state their experiences. We have had the room packed. I have counted nearly 100 men in it, indeed the room could not hold more. This is almost regularly so on Friday evenings. It is run in a great measure by the gardeners themselves, who appoint their own secretary, although we lend the room and give the help of our staff. There is another class of the kind at Maldon and one at Colchester. Probably the movement will still further extend. The farmers are keenly interested. Sometimes perhaps a well-known lady or gentleman will come and give an address about flowers, say dahlias, and the men who are interested come and give their experience: that is very informing and I think it does much good.

964. As the result of attendance at your winter school, do some of the students desire to get further instruction at college?—That is rather a difficult subject. We have, as a matter of fact, given scholarships, tenable at some place of higher instruction. We have done that in two cases, but we are not sure that the man who comes back is the farmer. Perhaps he finds something more profitable than farming to do, or he may go to another country. We look upon this as a small matter compared with what is done in our own school whilst at the same time keeping the students in practical touch with farming.

965. You do not give much encouragement to your students to go in for higher education?—Yes, we offer scholarships in suitable cases. We have given scholarships of £60 in a year, and we have sent two or three to Cambridge, and to places in the North of England.

966. I understand you are doubtful about that policy?—Yes, doubtful about the result. Doubtful whether it is beneficial in proportion to the cost. The father of one who came out near the top last year came to ask me whether he should pay the difference and send his son to Cambridge, but after talking it over we were not sure whether from a practical point of view it was not better to keep him in touch with the land, and whether he would not in that way become a better practical farmer than if he had gone on with the scholarship. I am not myself expressing a decided opinion, but that is an open question.

967. There is no farm attached to your institute?—No: we got over that difficulty by taking the students to different farms in the neighbourhood, selected as specially of interest in regard to cows or sheep or wheat.

968. You have no difficulty in getting access to such farms?—No; the farmers are generally pleased for us to come.

969. Do you think the length of the course in your winter school is sufficient, or would you like to see it made longer?—As the result of experience, and after thinking over the matter from the farmers’ point of view, we think it is better for the young farmers during the greater part of the year, to keep in practical touch with their own farms.

970. When students have attended the winter course, do they in many cases come again in the following winter? Yes, some come for a second year.

971. (*By Lord Barnard.*) I think you have not yet given the Committee any account of the body which controls and supervises the whole of this instruction. I see in your printed report a list of an Education Committee consisting altogether of about 47 members?—There is also a small agricultural sub-committee of which Mr. Goodchild is the Chairman, and the other two gentlemen present with him are his colleagues. All three of them are farmers. We have always made a point of endeavouring to secure the co-operation of the best men available in each special branch.

972. How often does that agricultural sub-committee meet?—Once a month. There is also a visiting sub-committee which meets about once a fortnight.

973. Do they keep regular minutes, and submit them to the Education Committee?—Yes; these are printed every month.

974. All business eventually comes before the County Council?—Yes.

975. And is approved at the quarterly meeting?—Not necessarily at that meeting. The powers of the County Council in this matter are delegated to the County Education Committee.

976. Do all matters come before that Committee?—Yes, every detail.

977. You act as secretary to that Committee?—Yes.

978. As to finance: does that Committee requisition what they require, or are they granted a certain sum and left to do the best with it?—An estimate is submitted each year. We look chiefly to the County Council, and we know how much we can get. If anything extra is required we send up a report, and generally get it carried through without difficulty.

979. There is no disposition on the part of the County Council to object?—Not at all.

980. Is there any disposition to increase the grants from the County Council?—We do not consider it a grant. We look upon our establishment there as that of an institution maintained by the County, and on general lines the County finds sufficient funds to run it.

981. (*By Lord Belper.*) Does the sum you spend on agricultural education come out of the money which the County Council has for Secondary Education?—Yes; it comes out of the general fund.

982. Do they raise a rate?—Yes, a penny rate, and the rest comes out of the so-called “whisky money.”

983. (*By Lord Barnard.*) Have you a copy of your accounts?—I have a statement of what it costs to run the Institute and laboratory.

984. Is any proportion of your salary or other administration expenses charged to the agricultural Sub-Committee?—No.

985. Your county gives a large proportion of the residue grant; I think 16.44 per cent., whereas the average is little more than 12 per cent.?—I hope you will not make too much of that.

986. You don’t have any regular long course of instruction in addition to the short courses you mentioned; no year’s course?—This year, in the case of a young man who won an agricultural scholarship, as it was not thought desirable that he should go away for twelve months, we gave him £10 and free use of our laboratories with assistance from the staff. He is going in for land agency and surveying.

987. Do you in any way test the results of the instruction given; I mean have you any certificate or examination?—They always have examinations at the end of the course. The agricultural examination is done by the University of Cambridge.

988. What about the ages of the students?—Those who attend the agricultural classes will be about 18; and those who attend the horticultural classes are probably, as a rule, about 15. The teachers who attend the Saturday classes are men and women—generally of middle age.

Mr. J. H.
Nicholas.
2 May, 1907.

989. Where were the lectures delivered of which you read a list?—At Chelmsford and Colchester.

990. I gathered from what you said about the young men going to Cambridge, that your object is limited mainly to educating young men who are going to be engaged in farming work?—Yes.

991. You don't want to extend educational facilities to young men in other professions intimately allied with farming, such as agricultural valuers, land agents, maltsters, &c.?—The Committee would be sympathetic and disposed to be helpful in any such cases if meritorious and suitable.

992. You gave up your travelling dairy?—Yes. The expense was too great to continue permanently. We worked the travelling dairy all through the county and then decided to centralise.

993. The public hears much sometimes of the Great Eastern Railway and its shortcomings, but is not Chelmsford well situated for railway facilities?—Yes; both for London and other parts.

994. You don't draw any students from London?—We have had one from Middlesex.

995. In regard to analysing under the Food Stuffs Act, I see your report states that you will not undertake work which should be done under the Act?—Yes. We want to give the farmer such help as he cannot easily get in any other way.

996. Do you find that the funds at your disposal are insufficient?—We could spend a great deal more money—

997. No doubt; but could you do so profitably?—Yes, we could make good use of it.

998. In what way would you extend your operations?—It is possible we might arrange for sub-centres or for getting additional men to work up the districts by lectures and matters of that kind, but I think as a whole at the present time we should go slow in developing.

999. You do not contribute anything to Cambridge, do you?—Yes, we give them £100 a year.

1000. Do you include that in the £2,900?—No, that is not included here.

1001. Do you include the scholarships in the £2,900?—I mentioned £3,000 roughly as what we spent.

1002. Yes, call it £3,000. The £3,000 does not include the whole of the money spent?—No; I should think we probably spend £1,000 more for instruction in ploughing &c., and for other rural courses. It is a big item for our county, and I am afraid one day we shall get it reduced.

1003. You told us you have worked out your own salvation. I presume you mean by that that your Council evolved this scheme of itself entirely?—Yes, with our instructors and others, and this is the best result we could possibly get from our experience and knowledge.

1004. You did not model your scheme on that of any other county?—We did not. We were glad to get particulars from other counties, but we made a point that we would have something that would suit our own county.

1005. Has any other county worked on similar lines that you know of?—I should not like to answer that.

1006. You have given us one very interesting piece of information, namely, that you have had the experience of being under the Board of Agriculture and under the Board of Education. Can you tell me at all what the feeling of the agricultural classes is on that subject?—In what way?

1007. Do you think that the Board of Agriculture or the Board of Education is the most satisfactory?—Without expressing my own opinion I should say that farmers would be distinctly more in sympathy with the Board of Agriculture than with the Board of Education as such. I do not say whether it is justified or not, but I think that would be the opinion. Our friends here, however, will be able to give you a better answer perhaps.

1008. (By Lord Belper.) I only want to ask you one question arising out of what Lord Barnard has asked you. As I understand, your expenditure on agricultural education comes as you said out of the funds at the disposal of the County Council and from the Government grant, and of course that is adopted by the County Council when it is brought before them at their annual meetings?—Yes.

1009. Can you tell me whether in addition to that it is the custom in your county that the estimates of Education for the Education Committee, including your agricultural estimates, would all have to be passed by the Finance

Committee of the County Council before they are adopted at all at the end of the year?—That is so; they have to go before the Finance Committee.

1010. The estimates for the coming year would have to be approved by the Finance Committee of the Council—I do not mean the Education Committee—before they are finally adopted?—That is so.

1011. If there is any alteration in the estimates I suppose that would be made at the October meeting, and a supplementary estimate would have to be produced before the October meeting of the County Council?—That is so. I may say we have a very sympathetic Finance Committee at present, and we have no difficulty with them at all.

1012. That gives a complete check, no doubt, to the County Council as to how the money is going to be spent, and it would prevent you from exceeding your estimate?—Yes, they are very careful about that. Having once estimated even for our buildings we must go with a supplementary estimate to them if it has to be exceeded.

1013. You have to bring that forward at their meeting in October?—That is so.

1014. (By Mr. Lamont.) I think your Education Committee organised expeditions to Denmark, Holland, and Hungary some time ago?—Yes.

1015. Those no doubt were very valuable in their results?—I think they were very informing and very useful. It has a tendency to broaden men's minds, if nothing else.

1016. Certainly the reports that were published of those expeditions were very valuable in many parts of the country?—Yes.

1017. How were those expeditions paid for; did the expenses come out of the County Fund?—No; the farmers paid their own expenses, but those of the staff who went were, of course, paid by the County.

1018. That expedition consisted not only of farmers but of landowners and land agents, and was widely representative of the different classes in the country?—Yes, that is so, but all interested in agriculture.

1019. Apart from the three that I have mentioned, to Denmark, Holland, and Hungary, have there been any further expeditions?—There was one to Scotland, and we are just arranging another to the North of England, starting on the 25th May.

1020. Have you found that the farmers and landowners who went on those expeditions have shown any greater inclination than others to adopt the methods which they found successful in those countries which they visited?—I am not sufficiently acquainted with their methods on the different farms to say that, but I think we found them very much more sympathetic with regard to agricultural education and development generally, and if I may say so, more open-minded with regard to the agricultural work that was being carried on in the County.

1021. I suppose the knowledge that they must have gained of the working of the agricultural and secondary schools in Denmark must have opened their minds to the value of agricultural and scientific education?—Yes, undoubtedly, and the treatment of milk and similar matters. It has a good influence on the farmers, generally, because they talk over these matters at their market dinners, and so on, and it gets a good feeling in the County, and works well.

1022. I imagine the reports are drawn up by the secretary to the expedition in accordance with any notes furnished him by any member of the party?—Yes; as a rule all the notes are sent to the chief who is in charge of the visit, and he puts them together, and they are published in a book. There is rather an extensive one on Hungary, and shorter ones on the others.

1023. The Hungary one is illustrated?—Yes.

1024. The report is not published at the expense of the members of the expedition, is it?—They all pay so much towards it.

1025. (By Lord Moreton.) You told us that there was no farm in connection with your courses, and that pupils were taken to various parts. Was any instruction given them on those occasions in the judging and valuation of livestock?—Not specially, but when seeing stock, almost the first thing they get on to is "What is the value of this?"; there is nothing like a lecture, or anything of that kind, but it is an item that is always considered.

1026. There is nothing done to try and interest them in the difference between a good animal and a bad animal?—

Mr. J. H.
Nicholas.

2 May, 1907.

Yes, undoubtedly there is. We have special lectures on stock and other matters that include that.

1027. Do you do anything as regards teaching them elementary veterinary science? I will put it in another way—the same question was put by Lord Barnard yesterday—is there anything done towards teaching first-aid in veterinary work?—I should say not, at the classes. We have had travelling lecturers—we have employed veterinary surgeons themselves who have gone and given lectures on this in the various districts.

1028. I take it those would be attended chiefly by the fathers of the pupils?—Chiefly.

1029. But what as regards the pupils?—We do not employ veterinary surgeons to give lectures at the institution.

1030. If you had more funds at your disposal do you consider that that would be a useful subject to take up?—Yes, I do; and I think in that direction if we could send further men out it would be a valuable thing. Those lectures that were given were well attended, and were valuable ones, but we had to drop them.

1031. I was not quite clear when you were describing the lectures to gardeners, whether they were market gardeners or general gardeners?—Both.

1032. (By Mr. Staveley Hill.) On page 66 of the Annual Report on the Distribution of Grants, with regard to the finance, as to which you have been asked some questions, it says: "The fees for miscellaneous receipts amount to £86? (Handing book).—The fees in the laboratories, and miscellaneous receipts mentioned in the Board of Agriculture book?"

1033. Yes.—We have fees for instruction in horticulture and dairying and agriculture, but those are fees paid by outside counties, who send some of their pupils to us.

1034. I understand. With regard to these market day lectures, there are a great many market towns in Essex, are there not?—Yes, a considerable number.

1035. Do you go round them in turn?—Yes, but we chiefly go to Colchester and Chelmsford. Sometimes to Braintree; sometimes to Maldon, but generally Colchester and Chelmsford. The other centres should be attended to, but we do not go as widely as that.

1036. It is pretty well known throughout the county that there are such lectures?—Yes, but we do not cover the county generally as we do with Chelmsford and Colchester.

1037. Do you find the number of students attending the classes you hold have been increasing?—Yes, and with regard to agriculture a better class of student also.

1038. (By Dr. Somerville.) You were telling us about the teachers in elementary schools coming up to Chelmsford and getting special instruction?—Yes.

1039. Do those men go back and teach only gardening in their schools?—Not necessarily. We have developed gardening for these teachers rather more specially since the late Act came in. But they would take nature studies and some elementary science.

1040. Do you think any of them attempt to teach the principles of agriculture under the Board of Education Code?—Oh dear no.

1041. Is the principles of agriculture not taken as a subject in any of the schools in Essex?—No, it does not seem to be suitable for youthful minds.

1042. That, of course, is a matter of opinion. There are hundreds of places where the principles of agriculture are taught?—But not in our county.

1043. The requirements of young farmers are met with almost exclusively through the agency of the short courses to which they resort in Chelmsford?—The nine weeks' course.

1044. The market day lectures are intended rather for men who are actually engaged in the business of farming?—Yes.

1045. You do not go in for local systematic and continuous courses of instruction in agricultural science for young men, do you?—We find it such an expensive matter. If we took it we would have to cover really dairy work and biology and chemistry to do it properly, and we think they can get that better at our central institution.

1046. Still in that way you touch only a very small proportion of the total number of agricultural youths between

the age of 16 and 20, we will say?—Yes, a very small proportion probably.

1047. The rest are not directly affected by the organisation?—Not directly—indirectly, doubtless, to an extent.

1048. I do not suppose you would know what the agricultural population in the county of Essex between the age of 16 and 20 would be?—No, I could not tell you.

1049. The Committee may take it that by far and away the larger proportion of the youthful farmers do not directly come within your influence?—Directly, I should say that is so.

1050. In the County of Essex there is a so-called agricultural school in Dunmow, is there not?—I do not know what it is called really; I think they call it a technological school now, for pupils, boys and girls, up to about 14 or 15 years of age.

1051. It does profess, does it not, to give something in the nature of agricultural education for youths?—Yes.

1052. Do those boys come to the Chelmsford classes afterwards?—No.

1053. Still, I take it, they are Essex boys?—But it does not follow they are going in for agriculture. At one time it was treated as a secondary school.

1054. Am I to take it that as far as you know agriculture is not taught there now?—They teach certain agricultural subjects.

1055. May we not assume that the boys take those subjects with the intention of becoming agriculturists?—I suppose so.

1056. You do not know whether in fact they go and get superior instruction later on?—No, I should say not. There are girls there as well; it is not for boys only.

1057. The Committee may conclude that you are not very much in favour of educating the youths of Essex beyond the point where they would continue to remain in the county and to practise agriculture?—Substantially that is what we are doing. We think in that way that probably we can do more good to the farmers of the county, but wherever we found a youth of exceptional merit desirous of going on for higher work, the Committee gladly give aid, but they are not all disposed to go on even if they do very well at our school.

1058. You would in fact be quite pleased to see him get a post outside of the county subsequently?—Yes; I am sure we would, just as we are pleased when a member of our staff gets a better post, say in Ireland; although it is to our loss we should encourage it.

1059. You have told us you get a certain proportion of your students examined by Cambridge?—Yes.

1060. Is that the only return Cambridge gives you for the £100?—From a broad point of view we have thought that if agriculture could be developed there there are certain well-to-do people in Essex who might be able to profit at Cambridge, and from that point of view we thought we would like to aid it—not directly, but indirectly we thought it might be of benefit to the county.

1061. There has been a proposal, has there not, in your district to join up certain contiguous counties with a view of starting something in the nature of an agricultural school?—There has been a suggestion that we should work with other counties, and we have always been very glad to do it.

1062. Nothing has resulted from that?—Nothing considerable at present, except that having got our school and laboratories at Chelmsford we have always welcomed pupils from other counties, and we have a small grant now from Herts with a view to their farmers benefiting by our analyses and reports and classes; and pupils are received from adjoining counties.

1063. You have already told us that the classes at Chelmsford have drawn one pupil at least from Middlesex?—Yes.

1064. Do you now say you have drawn pupils from Suffolk?—Yes, and from Herts.

1065. Do you take those pupils in on the same footing as your own pupils?—No; they pay £1 a week.

1066. (By the Chairman.) I understand that Mr. Goodchild's time is limited, and if you will allow him to be interposed now, we will continue with you presently?—Certainly.

Mr. T. GOODCHILD, Chairman of the Agricultural Sub-Committee of the Essex Education Committee, called and examined.

Mr T.
Goodchild.
2 May, 1907.

1067a

1067b

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1067. (*By the Chairman.*) Will you give us your opinion on the work that is done by the Essex Education Committee?—With pleasure. I will put it as shortly and as concisely as possible. I approach this question from a different point of view, possibly, from Mr. Nicholas: I approach it as one who is very much interested in our work at Chelmsford, and as Chairman of the Agricultural Sub-Committee. I dare say some of the gentlemen connected with other counties would like some explanation of our Education Committee. It is divided into half a dozen sub-committees; one takes higher education, one agriculture, one is a visiting sub-committee, and so on. Our agricultural sub-committee is composed of 16 members, mostly interested in agricultural work. The control of the laboratories is in the hands of a sub-committee, which is a sort of offshoot of the Agricultural Committee. I am on it, and attend when I can. This sub-committee has control of the laboratories and the staff, and all the rest of the work which has to come up for supervision before our Agricultural Committee. You must recollect that Essex is rather a peculiarly situated county; it is not only a large agricultural county, but it is a tremendously large suburban county. Leaving out the West Ham Borough, which has nothing to do with us, with a quarter of a million inhabitants, we have, besides, some 600,000 Metropolitan people in our Administrative County of Essex, which all comes under one committee for higher education work; and though it is a poor county in some respects, the assessable value is so much that at the present moment a penny rate collects nearly £20,000 a year. Of course the elementary work in our big boroughs, of which we have several, is nothing to do with us; but in higher education work they are all as one—they all coalesce, and we are all represented. You quite appreciate the difficult position in which we and the rest of my party here are, who come from the borders of a county which is agriculturally agricultural and rural, being mixed up with a large body of gentlemen who are of the town, townly. Therefore we go very cautiously to work. We do not say that as finding fault. The suburban men are very liberal, and it is marvellous how smoothly we work together; and when you see the amount of money we spend, it does not look so large when you compare it with the large assessment and the amounts of money we have to spend for educational work. I would like to bring up several things I have noticed with regard to this work. You asked a question as to whether we had a farm. We do not have a farm, but in defending our grant of £100 for some years which we have contributed to the Department of Agriculture at Cambridge, which I have been very pleased to represent for some years in my own county, it has been my plea that what may be done on a farm in Essex is done by that University farm. Certain things we should like to see done ourselves are done there, and it saves the county of Essex the great expense of running a farm of their own. That £100, which I have had to defend to the best of my ability from the criticism of some of our town members, which is only natural, is that it would spare us as a county from going to great expense to maintain a farm of our own. I admit it would be very valuable if we had one, but it seems to me also it would be very expensive. We must not forget that the County of Essex has been very liberal, considering its association with the poor districts, when we have been allowed to spend £12,000 in building up a laboratory which I think none of us are ashamed of, and which will hold its own with any other in England, but we run to the expense of some £3,000 or £4,000 a year in maintaining it. Perhaps some of the members of this Committee might think that rather a big order; but, considering what we spend for other spheres of work, I do not think it at all out of the way, and we are going on gradually in a progressive way, as much as we can expect the ratepayers of Essex to support. Someone asked a question with regard to dairying work. We started by appointing Miss Matthews to the staff for dairying in the year 1893. Our course of instruction then was to go through all the rural parts of the county and hold classes and give demonstrations. We then fitted up a travelling dairy, and we did what we call all the elementary work—the spade work. We thought when we built the laboratory that it would be a good chance for discontinuing the travelling dairy and using the laboratory for dairy work. We thought afterwards that the students who came for a more advanced course

could go to Chelmsford, which they do at the present moment. Another thing which Miss Matthews takes up, which I do not think I have heard mentioned, is poultry, and when the dairy classes are not on at Chelmsford she has for several years past, in the course of the winter time, gone through the whole county of Essex giving poultry lectures, and I should think a great many parishes have had two or three courses—I believe many have had one—and she goes and holds these demonstrations at the larger villages and centres, and has classes of students, and visits those farms where she is requested to do so in the daytime when the lectures are not being held, to give her views with regard to the conditions under which poultry should be kept and managed with reference to sanitation, health, and all the rest of it. Miss Matthews takes those two things up, and she has a competent assistant with her, and they take the whole of the dairy instruction of the County of Essex, and also the poultry work as well. With regard to the experiments, possibly I may be able to speak from the practical point of view, as my sons and I are large farmers in North Essex. I think, myself, that they have been very helpful indeed. We have taken up cereals and roots, and different varieties of wheat; we are now doing barley; we have done oats; we have tried maize-growing and beet-growing, and shown the different forms of beet that Essex can grow, and a comparison with regard to the sugar they produced, as compared with what is grown on the continent. It is only the price of the sugar that has stopped us from going on with that further. We have taken maize and pea-growing and various other things. The accounts of those experiments are all in the books. If they are not in the books supplied to the Committee, I have no doubt Mr. Nicholas will be pleased to supply the Committee with the list of our experiments which have been conducted on a large scale in the last few years. With regard to these expeditions, the question was asked whether any information was gained. The expeditions went to Denmark and Holland, and Hungary, and Scotland, and we are going to the North of England this month. I think they certainly were very useful. I was not able to go myself, as my time is very fully occupied with one committee and another and public work, but I have sons who have gone to some of them, and as one expedition was made up partly of girls—I have a daughter who went some years ago to Denmark—and from those and others (because the members of the party were carefully selected by our committee in order to have members from all parts of the county, so as to give all the county an equal chance as far as we could) I know they not only brought back a great deal of information as to things to copy, but also as to a good many things which not to copy, and I am not at all certain that what they have learnt to avoid is not of as much value to them as what they have learnt to copy. I do not say that in any spirit of criticism at all. There are large estates in Hungary managed on Governmental principles, with thousands of acres where experiments are carried on, and stock rearing of valuable animals, and in the other countries they have seen the elaborate care that is taken of the poultry, and pigs, and cows, and they have learnt a vast number of things. In Holland they learnt that it was possible to keep their cows under much cleaner and more sanitary arrangements, and I am afraid some of them came home and were ashamed to see some of the hovels in which the cows are kept in the eastern counties—a thing I hope the next generation will not submit to. They found that the cows in Holland are better housed even than some of the agricultural population in some of our own counties. The question is, has any information been gleaned from these expeditions, and although, as I say, I have been too busy myself in public work, that I have not been able to go, I have done my best to see that practical men are sent, not for theoretical, but practical reasons, to see if they can reap knowledge which will be of benefit to their neighbours when they come home. In this way good has undoubtedly been done. Another question touched on was the number of students. I have not the least idea how many hundreds of students attend our course of lectures. It is not only what we do at Chelmsford or at Colchester, where I often look in myself, where we have these big attendances all through the winter, but it is at all the different lectures that we have in the county on horticulture, botany, and that sort of thing, and all our staff are at the disposal of the local committees. I do not know what other counties may do, but we manage things in Essex in our own way.

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Mr. T.
Goodchild.

2 May, 1907.

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We have local advisory committees who carry out all our educational work under the central committee, and they have charge of the technical work and instruction, and we get local control and management of local classes, therefore, everything we undertake at local centres. Our staff instructors at Chelmsford are bound to give lectures when required. The result of that is that we have had all this information spread through the length and breadth of Essex. Our old technical committees, before the Act of 1902 came in, used to do this work for many years; we had those technical committees sitting for many years, and we tried to take great advantage of them. I organised with a local committee in my own district for many years a course of instruction to the farm labourers and all the people employed on the farm, and farmers and landlords and everybody who liked to attend, could attend. We had practical men to give lectures at those courses—for instance, we had a shepherd who came in his smock, and gave lectures as to what he knew; and we had people in the other lines who understood stock, and so on; and we had very big attendances at those places in the Colne Valley. One time we had a man for horses, then a man for cattle, for sheep, and pigs, and all the various stock. We had also classes for ploughing. I have seen 50 or 60 pairs of horses competing after they had been well taught by a competent staff of teachers. We found very great interest taken in those classes of instruction, and the result was that I never saw a greater improvement in my life than I did after our agricultural labourers had been to the classes. They took great interest in them, and they improved many of them from ordinary ploughmen into first-class ploughmen. We gave them a diploma. On the competition day there were prizes given, and diplomas given in the different subjects. The same thing happened with the stacking. There was a vast improvement. You gentlemen who may have seen the stacks in the old days, and the unkempt and the untidy way in which they were, can now see the great difference there is. And if you will only give agricultural labourers the chance of learning, they are anything but the class of men they are usually taken to be, and they will endeavour to excel in their own work as much as any other class of artisan in the country. Then the continuation classes were begun in the old technical committee days, and they are continued under the present Act, and in all the country villages where we can have a course of instruction, we have the continuation classes for boys. I do not know that I need go more into these other things. I think, with regard to the County of Essex, myself, speaking as chairman of the Agricultural Sub-Committee, and being very much interested in agriculture, and coming out of quite a rural district as I do—the Colne Valley district—that we are going on satisfactorily at the present moment. With regard to our education at Chelmsford, I do not say we are progressive or anti-progressive; but I think the fact that my brother farmers appreciate it and that the bulk of the farmers in Essex are interested in it, shows the great benefit of it, and I think they are all agreed that we should take up anything that is of practical utility and run it for all it is worth. I do not say I shall want to ask my committee for a larger proportion for agricultural work, but I should not be a bit ashamed to do so if there was going to be any advantage derived from it, and I think they would look at it just as favourably as if Essex were an entirely rural county, perhaps more so, because having more money to play with I think they would be quite prepared to assist us if we could see the chance of using it to advantage. I must say, before I conclude, that we are spending £3,000 or £4,000 a year, and we are deserving of a good big grant. I do not want to make any comparisons. I have written to headquarters about it once or twice; but when we find others who only take up one part of the work, whereas we take up all parts of the agricultural work as far as we can—you have had it put before you by Mr. Nicholas, and it is no use my pressing it again—I think we are deserving. We take every phase of the work at Chelmsford, and if there is anything left out, I have no doubt we should be prepared to do it; and I think, under those conditions, we really are entitled—I do not wish to use any stronger word—to a good donation yearly for the work we do. We try to have good men on the staff, and we have had some very good men on the staff. You know the history of those men who have left us—Mr. Dymond, who is now an Inspector of the Board of Education, and Mr. Houston, who is in Dublin—and we are trying to get the best men we can to take their places; and I do think, according to what I hear has been given to other institutions, that we are entitled to a full thousand a year as a help to the work we are doing at Chelmsford. I have plenty of other information if the Committee would like to ask anything with regard to the work. Mr. Nicholas has been able to supply you

with a lot of details that possibly he may know more about than I do. I give up as much time as I can to the meetings of these committees. I think my agricultural committee are a first-rate lot. They do all they can to support and to back up the work, and I am very pleased to come here and show this Committee what we have done and what we are intending to do, and at the same time not to forget to press our claim. I think I ought to acknowledge the great assistance we have had from the Agricultural Department at Cambridge. We have received very valuable assistance from them. I know our friends—Mr. Somerville and Mr. Middleton—who we have been happy to work with at Cambridge, and I do think Cambridge has been of the very greatest assistance to us, and has saved us from having to run at our own expense a farm of our own, and up to the present I do think it has answered practically all the requirements.

1069. You are of opinion that lectures to labourers would have a useful effect?—I am certain of it. I only speak of what I and my sons have been in the habit of attending at different places in the county, and those lectures I have attended, from the great interest that is taken in them, I am certain they have done a lot of good. Of course in connection with the labourers' work, prizes for ploughing or stacking or anything of that sort adds a little interest for them, and anything that involves a little competition where Englishmen are concerned, especially with the chance of a prize, even though it is not worth very much, at the end is an inducement, and the labourers are always keen to attend—at any rate they were in my district.

1070. As you have mentioned, Essex, as we know, is partly urban, so that I suppose secondary education is well supplied in the county; I mean, in the rural districts. Are there a sufficient number of secondary schools accessible to farmers' sons?—May I be allowed to expound without a simple yes or no? When we started our committee-work four years ago, we decided to have secondary schools all over Essex. We had Professor Sadler down and took his advice. Last week we opened our first mixed school, and this week we have opened another—a girls' school—and we are trying to have secondary schools for boys and girls separately where the population is large enough to admit of it. We are trying to give the whole of them an opportunity. In the Colne Valley, which is a very rural locality—I do not suppose anyone here has ever seen it except Professor Somerville and Professor Middleton—we have a secondary school for boys at Earls Colne, and we make a fairly liberal contribution to it from the county. We have a technical school at Halstead, one of the first in a rural district, where we give the town schools a certain proportion of the time and the other rural schools the remainder. It is both for boys and girls. The boys learn handicrafts and the girls cookery and all the different things. We are now buying a site to establish a secondary school for girls at Halstead. I give you those details to show what we are trying to do in that Colne Valley.

1071. The County Council have at present made liberal contributions?—Yes, very, very liberal indeed; they make a big contribution.

1072. (By Mr. Latham.) Can you tell us why the travelling dairy schools were stopped all over the county?—That is going back a good many years to the old technical committee days. We started them because there seemed to be a demand for them. Essex up to that time had never been considered capable of dairy work. Twenty years ago when Essex was blackened as derelict, a number of Scotchmen and men from Devonshire came into the county and started a new industry, keeping cows, and when we found that was the case and was successful, we thought it wise to give the labouring classes an opportunity of learning dairying work, and we appointed instructors. Miss Matthews, of Wales, was appointed, and she went round the whole county first to see if there was this demand, and she found that there were many farmers' daughters and others who were likely to be interested in work of this sort, and they came to these classes. The result of it was that it was very popular—it was as popular as anything I have ever known. They had good classes, and then they had a dairy travelling van to travel with the churns and apparatus and so on which travelled round the country, but that was a very expensive work, and when we built our laboratory we thought we had done all the elementary work, and that they could come to Chelmsford in future.

1073. Essex has had a great many farmers imported into it, has it not?—Yes, a great many Scotch and Devonshire farmers.

1074. That has virtually transformed the farming industry in the county?—Yes, especially on the north and

Mr. T. Goodchild. the south side : not so much on the north-east side and the west.

2 May, 1907. 1075. Farming in Essex has very much altered during the last few years ?—Yes ; a good deal of the land has been laid down to grass. It is not a grass soil—not a rich grass soil—but still after a certain number of years it grows a fair kind of grass, and, with cereals not paying for growing under the present order of things, people have taken to dairy farming and to supplying London with milk. That is done on a very large scale indeed, especially on the south side.

1076. Now you have got the dairying course at Chelmsford you get students to come ?—Yes, a great many do come.

1077. But it leaves a great part of the country not covered as it was with the travelling dairy school ?—Yes.

1078. We have not heard anything about the prices of the produce ?—They have been very satisfactory.

1079. Mr. Nicholas is coming back, and I will leave that question to him. With regard to elementary teachers, I have never been able to find out what you teach them ?—They go from the different parts of the county and have their classes on the Saturday when they are not at school. Nature studies they go in for a great deal, and ramble studies, and they learn a great deal of botany. Mr. Nicholas will be able to tell you all about that. Being in the farming line myself, I have not been able to get all these details.

1080. Possibly you are one of the Board of Agriculture Correspondents, the same as I am, and consequently have a great number of useful leaflets sent to you ?—My son is one of their correspondents.

1081. Are the leaflets sent out by the Board of Agriculture made use of by teachers ?—There is such a lot of literature sent out broadcast in this country, that I am sorry to say I think a great deal of it finds its way into the waste paper basket ; but if you will allow me I will ascertain definitely on that point, and send you that information if you will give me your address.

1082. My name is Latham ?—Oh yes, I meant if you will let me know where to send the information to.

1083. There is my card. (*Same handed to the witness.*) I would like to know what sort of attendance you get at your lectures ?—I have been attending the Colchester lectures chiefly. From about 50 or 60, the smallest, up to about 120. I should think the classes average very nearly 100, and they are attended by all the best farmers on that side of Essex.

1084. Are those lectures attended principally by the fresh number of men that have come into Essex ?—All classes attend, but there is nothing like the number of fresh men in my district ; you must go up more into Mr. Steel's country, Southend and Rochford, for them. Of course there are around us little batches of them, but nothing like the tremendous lot they have got round Southend and the centre of the county.

1085. They do take a very great interest in it ?—Yes, all the best of them, men like John Eagle, are in the habit of attending them in their own district.

1086. You do not do anything towards teaching your labourers as to the construction of the machinery and slight repairs to machinery ; is not that a very useful thing ?—After we got into the tremendous expense we did two years ago, as a result of the 1902 Act, and found what we were spending on education, the chairman appealed to us to draw in our horns as far as we could for a year or two, until we knew where we were, and, although I have always pushed technical education to the best of my ability, I have tried as much as I can not to spend any more money for fresh work until we could find out how we stood exactly.

1087. Do you not teach horse shoeing ?—Yes, we had classes for one or two years, and blacksmiths used to come from different centres and take their degrees. In fact, some of them have them up over their doors at the present moment. It did a lot of good. We found there were plenty of people who came to attend things of the sort and got a lot of advantage from it.

1088. Mr. Nicholas spoke about placing the young students back on the farms with their fathers or others ?—You mean the ones that attend the courses at Chelmsford ?

1089. Yes ?—Of course the class of boys who go there are boys who have just left their schools, a good many of them about 15 or 16, and they have gone to those courses for perhaps one or two years, and at that receptive age they do gather a lot of information, and I only wish that I had had the opportunity that my boys have had who have been to Chelmsford.

1090. (*By Mr. Davies.*) How does your Agricultural Committee keep in touch with the other localities in the county ; what machinery have you for arranging lectures, and so on ?—Through our advisory committees. Every year we ask the advisory committees to prepare a scheme for higher education, including work for agricultural experiments and that sort of thing, and they send up schemes asking that a certain lecturer may come and hold a course of lectures on such and such a subject ; others on orchards and gardens, or whatever it may be. That is accepted by the higher committees and it is charged against that particular district. Our suburban friends do not let all this go in ; it is charged and ear-marked against the particular district that asks for that particular instruction.

1091. How are the advisory committees appointed ?—They are nominated on this principle. We establish them on the union area. We thought there was nothing like the union area from the point of view of what work you do get done, and we went on that system in Essex. All the committees are convened once in three years to elect the committee, and they select, as near as they can, the members of the advisory committee, almost like a District Council, to represent all sorts and conditions of men and women of all politics and all religions. That is how our advisory committees have been appointed, and they manage the whole of their areas. We have local self-government, as it were, as far as we can get it, and we hope to keep it.

1092. Do you help the students who take the short courses ?—Some of them we pay the railway fares for, and up to lately we have been paying a maintenance allowance for those who get the scholarships and go to Chelmsford—that is up to the last six months. We pay the railway fares for the agricultural students.

1093. And they board themselves ?—Yes, but it does not cost them very much.

1094. Do they go in for the National Diploma in Agriculture Examination ?—We generally have an examiner from the Department of Agriculture at Cambridge. They generally send somebody down to examine our students, but I cannot answer that question.

1095. (*By Mr. Latham.*) You have said a great deal about farmers' excursions to the Continent and different places. Is there any attempt made to distribute that information after they come back ?—Yes, an account of it is drawn up, and we always send the man who has been in charge of the tours round the county the following winter and hold meetings, and he goes there with diagrams and shows them all that they have done, and there are nearly always several amongst the audience who have been on those expeditions, and they dot the "i's" and cross the t's," and the rest of the people round have an opportunity of trying to learn as much as possible.

Mr. GEORGE RABY, called and examined.

Mr. G. Raby.

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1096. (*By the Chairman.*) I will simply ask you, Mr. Raby, to mention any supplementary facts that you have to add to the evidence that Mr. Goodchild has just given us ?—The ground has been so amply covered by Mr. Goodchild that I do not think I can add very much to what has been already said. My individual opinion would be that our course for the winter school of agriculture is not long enough to cover the whole curriculum that we teach there, and I think it would be a very great advantage

if we could extend that course. With regard to the local classes, there is no question in my mind that they have had a very good effect on the labourers in the county—these classes for ploughing and stacking, and thatching, and hedging. In my district they have been exceedingly well attended, and there has been a very keen competition at the finish. I cannot agree with what Mr. Goodchild said just now about the hovels in which the cows are kept in Essex. There has been a very marked improvement there

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in recent years. In some districts to my knowledge there are competitions in vogue for the best kept cows and the cleanest cow-houses in certain districts of the county.

1097. Would you explain about these local committees. Do I understand that in every union there is a local advisory committee formed?—Yes.

1098. Would you explain how it is selected and appointed?—The members of the County Council living in the union district nominate a certain number, I think it is about 15, and they submit those names to the central committee, and they either approve or add to them as they think fit.

1099. To the central committee?—Yes, to the central education committee.

1100. And they formulate any scheme which they think would be of advantage to the district. A scheme is formulated by the local committee and submitted to the general committee, and sent by the general committee to the sub-committee?—Yes, that is so, so far as they would relate to agriculture.

1101. The lectures which are given in that area under that local committee are paid for out of the funds locally provided?—That is so, except as regards those lectures given by the staff from the laboratories, which are county charges.

1102. The cost of the others do not come out of the general fund?—No.

1103. How are these funds raised?—By the higher education rate, the 1d. rate, plus the amount allocated out of the "whisky money" to that particular district.

1104. I thought that the penny rate was over the whole county?—That is so.

1105. Is there in addition a local rate for these purposes?—No, not in addition to the penny rate.

1106. Then it is taken out of the contribution of the penny rate of that union?—Yes.

1107. By the central committee?—Yes.

1108. (*By Lord Barnard.*) You are engaged in farming yourself?—I am.

1109. And have been, I suppose, for many years in the county of Essex?—Yes, over 20 years.

1110. You are probably in constant touch with farmers and meet them and know their opinions?—Yes, daily.

1111. Do they all share your views that the system adopted in the county for giving agricultural instruction is a real advantage to the farming classes generally?—I think that is proved by the greater amount of use that is made of it every year.

1112. Are you yourself of opinion that it has resulted in direct practical improvements in farming operations?—Undoubtedly, in my opinion.

1113. I do not know that it is a question to ask you because there are sure to be critics, but do you know of any particular line of criticism that has been put forward—any objections?—No; I do not think I do. I think it is generally admitted that the work done in the agricultural department of Chelmsford is very useful and very practical work, and I think everyone will agree as to the advantage of it.

1114. In the county is there any of that local feeling, which almost always exists in all counties, induced by local attempts to get advantages for special districts?—I do not quite follow.

1115. Does any particular district in the county ever obtain advantages which are not extended to other districts in the county?—No, I think not. The local advisory committee send in their schemes—any scheme that they think would be of benefit to that particular locality they send in—and I think they are all fairly considered by the central committee. If you refer to the agricultural analyses you will see how that is appreciated in the county. It is going up by leaps and bounds.

1116. (*By Dr. Somerville.*) Have you yourself taken a personal and practical interest in the classes for labourers in hedge-cutting and ditching and thatching, and so forth?—Yes, in my own district.

1117. I suppose a considerable amount of systematic instruction precedes the examination?—Yes, that is a condition precedent to giving any reward or prize.

1118. Do the ploughmen, for example, assemble on one particular farm where the instructor is giving his demonstrations?—Yes, we have these lessons given by an experienced ploughman in perhaps an area which would

cover two parishes or three parishes where the young people could easily get there of an evening. It is generally about this time of the year in May, when the evenings are getting longer.

1119. So that the instruction is given after ordinary working hours?—That is so.

1120. I suppose that some farmer lends his farm to the instructor?—That is so, and also team and plough.

1121. There is no difficulty in getting farmers to give such facilities?—Not the slightest.

1122. In no case I suppose that you know of is the instruction given during working hours?—I have never heard of it.

1123. How many lessons comprise the course?—Twelve.

1124. There are always prizes given as the result of the competition?—Yes, and of course one of the conditions is that the requisite number of attendances at the classes must be made.

1125. (*By Mr. Staveley-Hill.*) How long have these classes of instruction for labourers been in existence?—For several years.

1126. Do you find that as time goes on the numbers of labourers attending the instruction and afterwards the examination increases?—I think they have tended to stimulate the art of ploughing, for instance, in every district.

1127. Yes, but do the number of labourers who attend, and who are mostly young men, I presume, increase?—I think they are about the same as when we started.

1128. They have not increased?—No, but the classes are held at rather closer centres now. There are more of them in the county now.

1129. How many do you have at one centre in the course of a year?—By a centre do you mean one local advisory district?

1130. Yes?—I dare say there would be six or seven centres in a district. It would have to be get-at-able, because these men cannot walk far from their work when they are finished.

1131. (*By Mr. Middleton.*) How many instructors have you got in the county of Essex?—We pick out the best man we can find.

1132. Each advisory committee selects its own man?—Yes.

1133. He is selected because of his skill, I suppose?—Yes, they generally get a local reputation for skill, and those are the men who draw the young men to the classes, whereas a stranger would not do so.

1134. Can you give an idea as to how many attend the classes of this sort in your neighbourhood?—I should say an average of about 10.

1135. How long do the classes last in the evenings—about two hours?—Yes, about two hours, perhaps rather more sometimes.

1136. Has your experience like Mr. Goodchild's, been that the ploughing classes have been more successful than those of the stacking and thatching?—I think perhaps that they have, but I am not going to say that the stacking and thatching classes have not been a success.

1137. You think they also have been successful?—Yes.

1138. I suppose you get the best men for thatching and stacking that you can get in the neighbourhood?—It is a very difficult matter to give instruction in stacking. In my locality we give prizes for the best made stack; it is a competition really in the case of the stacking.

1139. You do not actually give instruction in that?—No, we cannot really give instruction in stacking.

1140. How do you manage in hedging. Is that by competition or do you give instruction in hedging?—No, we have an instructor in our district. We had a man from Warwickshire. He was in the district I should think for six weeks and that led up to a competition.

1141. (*By Mr. Latham.*) Nearly every question has been asked you by Mr. Middleton that I was going to ask. I presume you have ploughing matches all over Essex, do you not?—Yes, they are growing very fast in number.

1142. And if a man takes the champion prize one year he is very often offered the instructorship the next, I suppose?—Yes, that would be so usually.

1143. Do you give any instruction to shepherds and that sort of thing?—Not in my district.

Mr.
G. Raby.
2 May, 1907.

Mr. G. Raby. 1144. Do you give any education in shearing, and prizes for shearing?—Not to my knowledge.

May, 1907. 1145. I suppose there is not such a large number of sheep kept?—No, except on the Suffolk border.

1146. Is there any education given in the feeding of cattle?—In the Winter School of Agriculture.

1147. Is it given to the men themselves?—No.

1148. That is a very important thing, is it not?—Yes, and a very difficult thing to teach I should think.

1149. I quite agree. Many men could feed animals as well with half the food that another man would give them. It is a thing which is sadly neglected in a county like your own?—Yes.

1150. (*By Mr. Davies.*) With regard to the diffusion of literature, have you got any machinery for doing that, or letting the farmers know what the results of experiments have been in the county, or do they have to apply themselves if they want any literature on the subject?—

think we had a thousand copies of those books containing the results of our experiments printed.

1151. And you distributed those?—Yes.

1152. Without making any charge for them?—Without making any charge for them.

1153. Have you any agricultural libraries in the county?—We have a very good library at the technical laboratory.

1154. No branch libraries in the district?—No.

1155. (*By Mr. Medd.*) Have any of the village teachers in your neighbourhood attended any of these classes for teachers?—Yes, many.

1156. And also the Saturday rambles?—Yes.

1157. Have they given instruction in their school gardens?—Yes; school gardens are springing up all over the county, too.

1158. I suppose the parents value it?—There has not been much time to judge of that yet.

1159. You yourself, as a practical farmer, think that the teacher has very much improved?—Undoubtedly.

Mr. ALEC STEEL, called and examined.

*Mr.
A. Steel.*

1160. (*By the Chairman.*) Would you give your opinion to the Committee on the success of the work of the Essex Education Committee?—I think everything I have to say has been pretty well covered. I do not think it is any use my making a statement because I should only repeat what has already been said, and that would be lost time.

1161. (*By Professor Middleton.*) You have been long associated with this work, have you not?—Yes.

1162. For how many years have you been associated with the work of the Technical Committee?—From nearly the beginning of the old technical committee.

1163. What, in your experience, is the part of the work that has most attracted the farmer?—The analytical work.

1164. I do not quite understand how analytical work is done in the county of Essex. Mr. Nicholas said that no commercial work was done?—Yes; that is quite true so far as the regulations are concerned.

1165. That is to say then that analyses are only done for farmers who are prepared to use them experimentally?—I am afraid that the ground that is covered is much broader than that.

1166. In what way. Do they supply practically all the manures which are brought in for analysis?—Yes, farmers take pretty good advantage of the laboratories for having analyses of their manures and feeding stuffs.

1167. You think in the county of Essex, generally, farmers take a great deal of trouble to ascertain the character of the manures and the feeding stuffs which they buy?—They are taking more and more care every year.

1168. A statement went the round of the papers some time ago—I forget the origin of it but I believe it was based upon the report of the county analyst—that a very small number of analyses had been submitted to the county analyst during the year, and the papers were pointing out that Essex farmers were not making use of the analyst to determine the value of their manures and feeding stuffs. That is not your opinion?—I take it that you mean the analyst appointed under the Fertilisers and Feeding Stuffs Act.

1169. Yes, the report in the newspapers was based upon that?—It has been rather a dead letter from the beginning.

1170. The point I wanted to bring out was that the farmers in Essex, as a matter of fact, are very much alive to the necessity of getting the manures and feeding stuffs analysed?—Very much alive.

1171. That is just the opposite of the statement that went the round of the papers?—Yes. During this year for the nine months ending in April, the number of analyses done at the Chelmsford laboratories was 509. In 1896, the number during the year was 21, and every year, with the exception of one year, the number of analyses have increased very much, in fact during the last two years the staff has hardly been able to cope with the work

they have had to do, and we have had to wait some time before the returns have come back.

1172. Have you in your district had instruction given in ploughing and thatching?—We have had classes for about two years.

1173. About what number usually attend?—About a score.

1174. Do they last for about the same time as Mr. Raby mentioned—about two hours?—Yes.

1175. In the evening?—In the evening.

1176. And twelve lessons?—Twelve lessons.

1177. (*By Mr. Latlam.*) May I ask if you are a farmer?—I am.

1178. With the better management of the farms do you find that rural depopulation goes on with you the same as it does with other counties?—No, not much with us.

1179. May we take it for granted that all these extra things you are giving to the agricultural labourer is taken advantage of and shows that if it was taken up more widely they would stop on the land?—I consider that is greatly an economic question. We pay wages equal to what are paid in the towns, and in consequence we have no trouble in getting plenty of labour.

1180. Does that apply generally to Essex?—The wages in the agricultural districts generally are under the wages paid in the towns, but in our district we pay as high wages as in the towns, and we have no trouble in getting labour.

1181. May I ask you what the wages are in Essex?—Taking the county generally they are about 14s. or 15s. a week for a horseman, and about the same for a labourer; the horseman has a cottage along with that and the labourer has not, and then there are extras for the harvest and hay.

1182. Do not the people in the towns get more than that?—Yes.

1183. Then they are not so equally balanced?—I said in my locality. We pay an average of 22s. to 23s. a week in wages, and that is quite equal to what they get in the towns.

1184. You made a remark just now that I was sorry to hear, that the Fertilisers Act has always been a dead letter?—It has always been more or less.

1185. Can you tell us why that is?—Yes, I can. I have here a copy of some of the analyses made at the laboratories in Chelmsford, and I should like to read you just one or two of them, and they will explain themselves. This is a sample of linseed cake, and after the analysis is given this is put at the finish: "This sample contains a low percentage of oil, but a high percentage of albuminoids. It is not quite pure, and contains a slight amount of starchy impurities. This is brought out in the analysis by the high amount of soluble carbohydrates. The linseed cakes we have examined this year have a lower feeding value than last year, and contain as a rule less albuminoids and a higher amount of soluble carbohydrates. This sample compares well with them in feeding value, and is worth,

taking the food units of linseed cake at 1s. 3d., £8 10s. per ton." That sample was analysed at the laboratory at Chelmsford, and those explanatory remarks were made at the end of the analysis. I have three or four similar ones. Now I will read you one under the Act. There is no statement given of the quantity of fats or other solids, simply this:—"I am of opinion that this is a sample of genuine milk." That explains the whole matter in a nutshell.

1186. (*By Lord Barnard.*) As you have touched upon a subject which I asked Mr. Nicholas, I would like to ask you a question. I am not sure that your evidence agrees. I suppose you are aware of the regulation of your county

that: "All such analyses and reports are for *bona fide* agricultural purposes only; they must not be used commercially, nor for trade purposes. All samples must be carriage paid, and the fee must be sent with the sample. The Committee do not undertake analyses of fertilisers and feeding stuffs under the provisions of the Fertilisers and Feeding Stuffs Act. Such analyses can be obtained from the District Analyst appointed by the County Council." Practically those regulations are a dead letter as I gather?—They are to a certain extent.

1187. You have given the reason why?—Yes.

Mr.
A. Steel.
2 May, 1907.

Mr. J. H. NICHOLAS, recalled and further examined.

1188. (*By Mr. Middleton.*) The first question I wanted to ask you is with regard to what Mr. Raby alluded to about the analytical work. That has been explained to us. You do a very large amount of that work?—Yes, and I could have read a similar letter to you to the one that Mr. Steel read just now, only more fully, showing the style of work that is done there.

1189. I gather the difference between the two analyses is that the analysis made at Chelmsford ends off with some advice to the farmer?—Yes, it is of economical value.

1190. With regard to your staff at Chelmsford, you told us that you were particularly successful in getting together a very good staff to begin with?—Yes.

1191. That very largely accounts for the success of your institution?—Undoubtedly.

1192. Have you found difficulty in retaining your staff?—Yes, we have. When we have good men everyone tries to get them. We have lost Mr. Dymond and we have lost another recently. I hope we shall fill their places successfully.

1193. You do not appreciate any difficulty at your present standard of salaries—that is really what I am coming to. When you were asked how you would use further grants you indicated developing and extending other centres in the county. I was wondering whether there was any other direction in which you might do yourselves good?—Yes, I think we could. If you want good men and wish to keep them you must pay them and pay them well, and we have done that in our county, and to keep a really efficient staff I am not sure that we shall not have to make an increased expenditure in the near future with that end in view.

1194. You consider you may have to increase your expenditure in that respect?—I do.

1195. I think we may take it, perhaps, that the keynote of the success of your work in Essex is that you have all along carried the farmers with you and interested them in the work?—That is so.

1196. Do you think the presence of an urban population has had any influence upon the farming population?—Yes, I think it has had an influence for good. From my experience of the men from the urban districts on our Committee I can say that they have always been particularly helpful in initiating and settling our schemes and work sympathetically with the members of the Agricultural Sub-Committee, and they have certainly always given us great help in making suitable appointments on our laboratory staff. We have had no rivalry or jealousy or unpleasantness of any description with them.

1197. They have given a certain amount of stimulus to the rural population?—Yes, that is so.

1198. (*By Mr. Latham.*) Could you assist us by giving us the prices that you have obtained for the produce that you have made in your dairy?—I am afraid we have not made any profits. Do you refer to the cheese?

1199. Yes?—It varied as a rule. For Cheddar it was about 8d. a lb., and it ran up to, for Stilton, 1s. 3d. a lb.

1200. That is very good indeed. I think it was you that mentioned the large amount of milk analyses that you had had sent in?—Yes.

1201. Could you give us any return of them?—The analyses in 1897, for instance, were for feeding stuffs 4, for manures 13, soils 1, water 6, milks 5, total 29. In 1905-6, which is nearly 10 years afterwards, there were 74 feeding stuffs, 54 manures, 23 soils, 21 waters, 272 milks,

10 miscellaneous, a total of 454. Of those for Hertfordshire there were 48 in 1897, and in 1906-7 there were 104.

1202. You are Secretary of the Education Committee of your county, are you not?—Yes.

1203. Can you tell me why the Fertilisers Act has not been put in force by the Committee?—It is put in force by the Committee. They have appointed an analyst under the Act and they pay him the regulation fee.

1204. Yet even now it will not work?—No, it does not work.

1205. Is there any great pressure put upon the county to try and make it work?—I think there is no pressure put one way or the other; the people simply go where they wish to go.

1206. And having such a good friend in you?—In the committee if you please.

1207. Yes—they come to you?—The point is that our Committee is closely in touch with the farmers. The farmers know what can be done, and they know they will get advice. That is really the point of the whole thing, and in the other case they cannot.

1208. Would you explain to us about the weekly meeting of gardeners. I could not quite gather what that was?—They are weekly meetings of gardeners for discussion and self-improvement, at which addresses are given and discussions take place respecting gardening operations—it may be in trenching or particular kinds of flowers or different kinds of fruits or fruit trees and dealings with fruit trees—all kinds of subjects dealing with gardens. One subject is taken each evening, and the men are chiefly instrumental in improving themselves with the help of our staff.

1209. With the help of your staff—that is exactly what I wanted to know?—Yes.

1210. They do not attempt to teach each other without your assistance?—They teach each other through the discussion, but the staff are there to give them help and lead the men.

1211. You seem to have great power on your County Council. Do they delegate the whole of their power to the committees?—Yes, except the power of raising a rate or borrowing money—that is protected under the Act of Parliament. But they delegate all the powers they can to the committee.

1212. And you delegate your powers to the Agricultural Committee?—No, we do not delegate anything after that; they simply act as advisory committees and carry out certain agreed-upon work.

1213. The Agricultural Committee comes back again to the education committee?—That is so, but we have no difficulty with regard to that.

1214. (*By Mr. Medd.*) You could not say off-hand the cost of establishing, equipping and maintaining winter schools of agriculture in your county, could you?—No. I could tell you the cost of our present school. I should be very glad to send you a rough estimate of what it would cost later on.

1215. Thank you—the cost of establishing, equipping and maintaining the schools of agriculture and horticulture, and then, perhaps you could kindly send a diagram of the county school garden, illustrating the manner in which it is laid out and the cost?—With pleasure.

1216. Could you describe the social status of the pupils

Mr. J. H.
Nicholas.

Mr. J. H.
Nicholas.
2 May, 1907.

who attend?—Yes: I will give you particulars of each one for both schools, with pleasure.

1217. In regard to the school Saturday rambles there was a little correspondence in *The Times* a year or two ago implying that there might be some risk to plants, by the destruction of plants and so on through those rambles. I imagine you have not experienced anything of the kind?—No. I went down with the party in question, it was in the New Forest, and there was not the slightest ground for such a suggestion.

1218. The rambles tend to increase, do they not?—Yes, they increase very much.

1219. Of course you get all the assistance for which you ask in the way of advice and so forth from the Board of Agriculture?—We do.

1220. Does the Board of Agriculture ever spontaneously offer advice or suggestions?—No.

1221. It does not come to you in any advisory capacity unless you go to it?—No. I believe they send out leaflets and pamphlets and things of that kind, but not otherwise.

1222. You do not come in contact with them except on your own initiative?—No.

1223. With regard to the Board of Agriculture Correspondents, do you get any benefit as an educational authority or as an agricultural authority from them *qua* correspondents?—I do not understand—correspondents?

1224. The official correspondents nominated by the Board of Agriculture in each district. Do they come into connection with you?—No.

1225. You employ them to some extent?—No. I have no knowledge of them.

1226. Reference was made to the school at Bigods. With that school you, as a County Council, have no connection, have you?—We have at the present time.

1227. You have now?—Yes: we gave them a grant of £100 a year but there has always been some uncertainty about the school at Bigods in regard to our county, and when the Board of Education withdrew their recognition we felt we could not continue ours, and then we withdrew our grant. Since then it has passed to the Technological Branch of the Board of Education, and they have recognised it as a technical day school, and, since that has been done subject to a recommendation being made, we shall probably aid it again.

1228. You are not aware of a school of a similar type in England to Bigods, are you?—No, I cannot say I am.

1229. There is one in Scotland at Goldspie; that is the only one. To go back to types of schools, on any of these excursions abroad, in Denmark or Holland, did you notice any particular type of school or form of instruction there which, if you had means, you would introduce in Essex?—I think we should develop very much on the lines we have—it would probably be more of a national matter, the provision of the very large establishments that you find in Hungary, for instance—the great central institutions they have there for agriculture, taking a three or four years' course—those would be beyond the powers of individual counties.

1230. You did not visit France, did you?—Not with the party.

1231. To some extent you do in your county what the Dutch do with their winter schools?—Yes.

1232. (*By Prof. Middleton.*) Would you tell us the cost of providing instruction in ploughing, hedging, thatching and so on. I should like to know the cost of instruction in ploughing, hedging and thatching in particular districts, and any other art that you teach?—I will send you that, with pleasure.

1233. (*By Dr. Somerville.*) These figures of analyses that you gave us were for the year 1905-6, were they not?—They were.

1234. Is that the last return you have available?—No; I have 1906-7, from July to April.

1235. How many analyses of milk does that include?—For that part of the year 256.

1236. Is that an increase on the previous six months?—Undoubtedly it would be, in proportion.

1237. Does that include the figures that were got under the cheap milk testing scheme?—Yes.

1238. Can you tell me whether that scheme is being taken advantage of to any considerable extent?—Yes, I think it encourages people to take systematic tests and send in regularly.

1239. You think that that test formulated by the Board of Agriculture has been much appreciated?—Yes, much appreciated; it leads to other things.

Mr. T. J. YOUNG, F.S.I., called and examined.

Mr.
T. J. Young.

1240. (*By the Chairman.*) You are the Principal of the Agricultural College at Holmes Chapel, Cheshire?—I am.

1241. Will you give the Committee a short review of the history and development of that college?—It opened for work on the 23rd September, 1895. If you wish to have the number of students in residence I could give you that for each year since that time.

1242. If you please?—For the year 1895-96, 93; 1896-7, 120; 1897-8, 145; 1898-9, 110; 1899-1900, 115; 1900-1, 103; 1901-2, 123; 1902-3, 143; 1903-4, 125; 1904-5, 125; 1905-6, 123; 1906-7, 130.

1243. To what class do those students belong?—At the present time there are 16 sons of farmers; eight sons of landowners and land agents; five are sons of retired farmers; three sons of merchants; three sons of accountants; two sons of engineers; two sons of secretaries; one son of a schoolmaster; and one son of a stockbroker. There are 41 in residence at the present time; that is rather smaller than previously, but we have rather gone to try to reduce the number of students and are endeavouring to get better class ones.

1244. (*By Mr. Latham.*) Would you give us the total number of students you have had?—1,455.

1245. In how many years is that—since 1895?—Yes, twelve years, an average of about 125.

1246. (*By the Chairman.*) Will you give us the courses of study?—There is only really one course, that is the diploma course. We do not split up our course of study except so far as we divide the courses into a horticultural one and an agricultural one. The horticultural students do not take a great many of the subjects such as agriculture and veterinary hygiene, like the agricultural students do; they take subjects like biology, botany and chemistry.

1247. Do the students follow the same course?—Yes, except that some take up horticulture and some agriculture; we have no short courses or special courses.

1248. What is your staff?—I have a staff of 11 at present: myself as principal and lecturer in agriculture and estate management, a vice-principal and lecturer in agricultural chemistry, one lecturer in surveying and engineering, one in biology, one in veterinary hygiene, one in horticulture, one in dairying, two laboratory demonstrators, one instructor for school gardens in the county, and one instructor in drawing and engineering.

1249. Have you a farm attached to the college?—Yes, a farm of 100 acres.

1250. Managed by yourself?—Yes, I manage the farm myself.

1251. That is in the immediate neighbourhood of the college?—The college stands in the centre of the farm, and we have seven acres of garden.

1252. Do you conduct stock-breeding experiments there?—Not to any large extent. We make a speciality of breeding good dairy cows, and especially pedigree bulls from known milking strains; we keep a herd of dairy shorthorns.

1253. Dairying, of course, is a very important industry in Cheshire?—It is very important. I ought to say that dairying is taught specially at another institute under the Cheshire County Council for women only; ours is for men, but we do not go into cheese-making so deeply as they do at the institute that is provided. That is for women only.

Mr.
T. J. Young.
2 May, 1907.

1254a. 1254. What type of work conducted by your College is of the most value in your opinion?—I think a carefully carried out internal course is one that seems to be appreciated by the students; at any rate we have more applications than we can deal with. We are having to enlarge the buildings a second time in order to provide accommodation for additional students. I think also the outside work in the way of experimental stations would be very useful if we had an extra man on the staff. I am hoping to advise my governing body to provide a man whose business it will be to go about and manage those experimental stations in the county, and hear what the farmers want, and then endeavour to answer their questions.

1255. Are there any centres in the county where experiments are conducted?—We have eleven experimental centres.

1256. Under your control?—Under the control of the college, but the number of those experimental plots might be increased with advantage, I think.

1257. That is what you consider the most urgent need?—Yes, I think it would still further bring us into touch with the farming community. At present our staff are a little overworked, and have not time to devote to the outside work and research as much as we should like to do. We could manage the internal work, but I think we want a man for the external work.

1258. Then with regard to the expenditure of the institution, perhaps you will give us the details of that?—Our total expenditure for the last three years has been, in the year 1904-5, £5,880 4s. 1d.; in the year 1905-6 it has been £6,873; of that there was £1,366 invested in new fitting up and buildings; and last year, although our accounts are not closed for the financial year, it is approximately £5,168.

1259. What are your sources of income?—Students' fees, sales from the farm and garden, and the grant from the Board of Agriculture; also a certain number, varying each year, of scholarships from the Cheshire County Council.

1260. Does the County Council in addition give a grant?—The County Council in addition give a grant—as a matter of fact it makes up the deficit.

1261. They accept the responsibility for any balance that may be due?—Yes, they accept the responsibility for that. I might say that this balance has been considerably larger the last three years. We have had to do a great deal to the place and make it fit to carry out a better and more useful class of work.

1262. How is the committee constituted which controls the institution?—Mainly by members of the Cheshire County Council. There are other co-opted members representing different agricultural interests.

1263. Is there an Agricultural Sub-Committee of the County Council?—Yes, there is an Agricultural Sub-Committee, and all of those are on it.

1264. Have the County Council delegated to the Education Committee ample power of dealing with the college?—The Agricultural Sub-Committee have full powers of control over the place.

1265. What is the attitude of the agriculturists in the county towards your work?—Pretty good; I might say they are favourable. I should say, speaking roughly, that quite 1,000 farmers visit the college in the course of every summer; that will be under the mark rather than over it.

1266. In what type of work does the agriculturist take most interest?—I daresay most of all in the variety trials of crops. Perhaps that is what he takes interest in more than anything else; that is what seems to attract them very largely, and the different manurial experiments. I think the college farm, taken as a whole, interests them more than anything else.

1267. Is it the larger farmer or the smaller farmer who takes most interest in your work?—I cannot say that I see any difference; I think they are both alike. The smaller men perhaps take more interest in the poultry keeping and calf rearing, and perhaps the larger men take interest in other things, such as potato growing; but we have as many on one side as the other, I should say.

1268. They both send their sons to the college?—Yes.

1269. Do the neighbouring counties in any way contribute?—No; we are entirely by ourselves.

1270. Higher fees, I suppose, are charged for those students coming from other counties?—Rather higher fees are charged from other counties, yes.

1271. What is the general scheme of field experiments that you have adopted?—I do not know that we have a

very definite scheme; it varies from time to time. Our variety trials of all sorts of crops are the chief thing. We are often asked to try something by a farmer or a farmer's club specially, and we do that work for them, but we have no settled scheme.

1272. Are local lectures provided throughout the county?—No; we do not do as much of that as we should like to be able to do.

1273. That is more a question of expenditure?—No; that is a question of the staff being overworked at present, but when we get a little easier we hope to be able to devote some more time to lectures.

1274. Do you think they will be well attended?—Yes, I think so. Our horticultural lecturer has had a very successful experience in his lectures; he has covered almost the whole of the county and given lectures, and has had large attendances.

1275. Attended mainly by gardeners, I suppose?—Yes, mainly perhaps.

1276. Do you give information on any subject, or any analyses that may be required by farmers?—Yes; that branch of our work has increased enormously.

1277. During the last two years?—Yes; the demand for information on specific points. Two years ago, I think, there were only eight applications sent in to the college for advice, and in the year 1905-6 we had 211 separate enquiries from farmers—chiefly seed, drinking water, milk, manures, food-stuffs and animal and plant diseases, and I see that during the past two months we have had 38 examinations and reports for farmers during the months of March and April. It is practically every day that we are doing that sort of work; it has grown more than any other part.

1278. Does that include analyses of manures and food-stuffs?—Yes, food-stuffs, samples of milk, drinking water, and plant and animal diseases of all descriptions.

1279. And soils?—And soils.

1280. Is any special provision made for training teachers?—Rural school teachers?

1281. I do not mean elementary teachers, I mean teachers in agricultural subjects?—I think, roughly speaking, half-a-dozen of those who have been through the college are at present in teaching posts.

1282. Do they go to a university afterwards?—Yes; they usually take a university degree although some have not done so.

1283. Do they obtain a scholarship for that purpose?—No; I think they have mostly done it at their own expense.

1284. What do you do as regards elementary teachers?—We are endeavouring to have a summer course this year for them.

1285. For the first time?—No. Previous to my having charge there were some Saturday short courses for rural teachers, but we hope to have a vacation course this summer especially with regard to the horticultural side of the subject.

1286. Do you endeavour to induce sons of farmers to come to the college; is anything done to attract them?—I think it is well enough known. I think so far as Cheshire goes, those who want to come come and, of course, most of them have the advantage of a scholarship.

1287. You have, I believe, already stated that there is no difficulty in obtaining more money from the County Council?—Yes, I think there is; they have made themselves, I think I said, responsible for the deficit, but they feel they have spent as much as they are warranted in spending, and they do not wish to spend more.

1288. Is there a rate for educational purposes?—Yes.

1289. A penny rate?—I should not like to say what it was, but there is a rate for educational purposes.

1290. Of course you would wish the grant from the Board of Agriculture to be increased?—We do hope that it will be, seeing that we have altered the style of work altogether and reorganised the place and put it on different lines.

1291. Specially for enlarging the staff?—Yes. I think an additional member of the staff to do outside work would be very valuable.

1292. Is the preparatory training of your students very satisfactory?—No; I think as a rule they are very deficient

Mr.
T. J. Young.
2 May, 1907.

in elementary education, especially ordinary simple mathematical work—whatever school they come from, and I have them from all sorts of schools.

1293. Is there any means at the college to supplement that want?—We are able now to insist upon them being fairly well educated by stiffening the entrance examination; we have more students than we need, and we pick up the best ones by stiffening the entrance examination, and now that we are in a position that we can choose somewhat, we make it a rule that if the student is not a farmer's son, he must spend a year on a farm before he comes. I think a good school preparation and then a year on a good farm is the best preparation they can have, because then they are able to assimilate almost at once what they are taught, and it is beneficial for them.

1294. What is the average age of entrants?—Not under 16 now; it used to be 14.

1295. Is the supply of secondary schools in Cheshire adequate?—I think it is good.

1296. The general education they receive at those schools is good?—So far as my knowledge goes it is, but the general body of our students that come do not seem to be very highly educated, especially in simple, every-day matters.

1297. They have generally frequented a secondary school, have they?—In most cases. Some come direct from the elementary school, but only a few.

1298. Have you any higher elementary schools?—Yes, of the grammar school type.

1299. You consider a general education is what is wanted; you do not want a specific education to be given to them before they come into your college?—No; I think a good general education first and a year or two years on a farm afterwards, if possible, is the best.

1300. Is much manual work done on your farm?—The manual work since I took charge is not so much as it was. I endeavour to make it more educational, but they have as much work as they can possibly do on the farm, and an endeavour is made to familiarise them with all important operations, but it is not allowed to interfere with lecture work.

1301. The lecture work is the principal part?—Yes.

1302. Can you give us any information as to the future career of your students?—Yes; about 73 per cent. of those students that I have been acquainted with during the past three years are actually in occupation of land; about 15 per cent. have gone to land agency and land management; about 7 per cent. have emigrated; and about 4 to 5 per cent. have drifted into other occupations.

1303. I suppose the attitude of the landowners in Cheshire towards the college is favourable?—Very favourable indeed.

1304. Have you any observations to make as to the uses of the college farm for teaching purposes?—A certain number of them go out to work in the mornings at a quarter past six, and when they have learned one branch of it thoroughly I teach them something else, to go into the stable for instance, and get the ordinary routine there, and when they are able to answer questions satisfactorily on that they go off on to something else, calf rearing or management of pigs or something of that sort. Every possible opportunity is taken to illustrate the lecture work on the farm itself, and we also have a livestock lecture room where we can take all sorts of animals and have judging and veterinary lectures and valuation of stock and so on.

1305. Is veterinary science taught?—Yes, we have a lecturer, and there is an operating table in the lecture room, which is fully equipped.

1306. (By Lord Barnard.) Who own and control the institution?—The Cheshire County Council.

1307. So that there is no question about their grant, they are responsible for the whole expense?—Yes, they bear the whole expense except what we get in fees and the grant from the Board of Agriculture.

1308. Practically what you get from the Board of Agriculture goes to them too, because they maintain the institution?—Yes, they maintain the institution, and it is paid into the College account.

1309. I think you told the Committee that the college was conducted by an agricultural sub-committee. Is there any scheme or any governing document which describes what the school is for, and so on—the objects?—

If there is one I have never seen it: I do not think there is.

1310. How often do the committee meet?—Once a quarter.

1311. At the college?—Always at the college.

1312. Are you a member of the governing body?—Yes, I am a member of the governing body, I think—*ex-officio*.

1313. Do the students who come to you all go through the three years' course, or the bulk of them?—A capable man can go through in less time, but three years is the average they require.

1314. Do they all go in for the complete course, or do some of them leave before?—Some of them cannot spare the time to do the whole of it.

1315. Do you find that you have many failures?—No; as I said before, about five per cent. drift into other businesses.

1316. I did not mean that; I meant failures to pass the examinations?—Yes, we have, of course, but not very many.

1317. Do you know what the proportion is?—I should think, speaking quite broadly, about half of them sit for their diploma and are successful—I should say about half approximately.

1318. You have given us a list of the various professions and occupations of the parents of the students. I suppose we may infer from that that the Cheshire County Council in establishing this college have not intended solely to educate the sons of farmers, but to add to the general stock of knowledge of scientific agriculture?—Yes, that is one of its objects.

1319. Can you say from your own knowledge whether the result has been satisfactory in the case of the sons of men not farmers?—Eminently so, because some of the most successful farmers have been those who have never seen a farm until they came to the college.

1320. It has been suggested to me that you could give an instance. Can you think of one now?—The latest I can think of is a clergyman's son. A few months ago I heard from him, and his landlord had returned him his first half-year's rent because of the way in which he had cleared up his farm, which was in a very bad condition when he took it.

1321. I see in the Report of the Board of Agriculture and Fisheries on your College that you have one peculiarity, which I do not think you have mentioned, adapted from the Canadian system of a live stock lecture room?—Yes, I did mention that. We have built a live stock lecture room and live stock judging and valuing and lecturing is given there.

1322. Lectures are given by a veterinary surgeon, who is a member of the staff?—Yes.

1323. You have told us that some of your pupils take up teaching?—I should say about 3 to 4 per cent. take teaching posts and go to something higher.

1324. They generally go to Scottish Universities, do they not?—Yes, I think so; Edinburgh seems to be the favourite.

1325. Can you tell me what it would cost a parent to send a boy to your college?—£36 for residents in Cheshire plus a medical fee of one guinea.

1326. What is that for?—To cover all cost of medical attendance in case of sickness: and £48 for those who do not reside in Cheshire.

1327. Does the £36 cover everything?—Yes, the £36 covers everything: we have been thinking we ought to raise the fees as we consider we are charging too little, or, at any rate, to raise the fees for those who are out of the county.

1328. I see in the list of subjects taught, the word book-keeping is not mentioned. What instruction do you give them in book-keeping?—A complete course in book-keeping. I think you will find it is mentioned. They sit for that in the second year of the examination for the diploma, and they also take book-keeping again in the final year.

1329. Yes, I was wrong. How far do you consider it necessary to take book-keeping?—We take the ordinary double entry book-keeping, cashbook, journal and ledgering. We are compelled to do that because of the public

examinations. Those who wish to sit for those have to learn book-keeping pretty thoroughly.

1330. (*By Mr. Lamont.*) As to the vacations, what vacations do you have?—Usually three weeks at Christmas time—from a fortnight to three weeks—about a week at Easter, and about seven weeks in the summer.

1331. That is about 11 weeks altogether?—Yes.

1332. The rest of the year is practically all term time?—Yes, the whole of it.

1333. As to dairying, as we have heard, yours is a great dairy county?—Yes, a shorthorn county.

1334. About how many cows have you now?—About 23 at present.

1335. Dairying is not mentioned here. Do you have a definite course of dairying instruction?—We do: it seems somehow to be omitted. As I said before, dairying is more specially taught at another institution in the county: it is looked upon more as women's work.

1336. Do you do anything in the way of research as to feeding and its effect upon the yield of milk?—Yes, we do a great deal of that.

1337. And no doubt as to the effect of feeding on the percentage of butter fat in milk?—Yes.

1338. Are the results of those experiments valuable and watched with much interest by farmers?—Yes. I gave a lecture on the variations of butter fat in milk and it was printed and published and sent round to all the magistrates in the county, and we also send out a large number of year-books to farmers in the county.

1339. Do you do anything at all on the lines of the teaching of agricultural history?—I incorporate it in my opening lectures, but we do not make a special subject of it.

1340. In Denmark it has been found very valuable in stimulating interest, and to a certain extent patriotic interest, by having a definite course of teaching in agricultural history, giving more attention to the rise and fall of wages and prices and the history of land tenure, rather than to the rise and fall of kings and parliaments. Do you think that would be a valuable thing?—Yes, and I do not see any difficulty in incorporating it by making a special subject of it.

1341. (*By Mr. Staveley-Hill.*) In the course of the practical instruction that you give to your students you have said they have veterinary instruction. Do you give them any instruction in draining?—Yes, we are always doing some draining, nearly every year, and if we, perhaps, do not happen to be doing any at a particular time on the farm, I always arrange to go and see some somewhere else that is in actual progress.

1342. You said that you had as many students at present as you wanted?—I have had to refuse about 16 lately.

1343. You said you had 41?—Yes.

1344. You have in some years had a greater number than 41?—Yes, I mentioned that, but we are trying to reduce them in order to get a better class.

1345. You have raised the age also?—Yes, and I also had to dismiss a good many when I first went there.

1346. (*By Mr. Latham.*) Can you give us any reason why you have a dairy school for women?—It seems to be an idea of my committee that it is women's work in Cheshire. I have frequently urged upon them the importance of having a better dairy provided at the college, but they seem to be of opinion that it is sufficiently provided for in the provision for women at the other institution.

1347. Can you tell us what experiments are carried on on the eleven demonstration plots?—Manurial demonstrations on grass land.

1348. Have you any experience in fattening sheep on those experimental plots?—Cheshire is a very bad county for sheep; there are very few farms on which sheep would live and do well, and I think it would hardly be practicable in our particular county.

1349. You spoke just now of lessening your internal work?—No; that I hoped it would become a little easier than it is at present, and the staff would not be so much worked internally.

1350. Can you explain how you hope it will become easier?—I thought as time gets on we would get a better working class of students who would be trusted to put in more work of their own.

1351. What is their own work?—Their own private reading.

1352. On your work?—Yes, on lectures and their own references to text books and things of that sort.

1353. I see from this Report of the Board of Agriculture that you seem to have had a good many of these elementary teachers: "During the year, 190 teachers"?—That does not come under our college.

1354. Do you have any of these elementary teachers' courses?—We have had Saturday courses for them, but they have been discontinued, and we have been hoping, as I said before, to give a vacation course this summer.

1355. What is about the curriculum you put before them?—We give them some simple agriculture, physics, and chemistry—something very elementary and simple—and teach them the use of balances and barometers, and out-of-doors pruning, and so on, and if they show themselves capable they are allowed to do it themselves.

1356. That is rather horticulture, is it not?—There are a number of the schools provided with gardens.

1357. Do you rather lean to horticultural than agricultural teaching for the school teachers?—Yes.

1358. I notice you do not put land surveying down as part of your curriculum?—Yes, it is down, and it is also an honours subject in the diploma.

1359. You spoke just now of a clergyman's son being one of your successful students?—Yes.

1360. Can you speak of it as a living that he has made of it? How satisfactory financially has he been?—He is making a good comfortable living.

1361. It struck me as rather strange that in a county like yours you should have to single out a clergyman's son as the most satisfactory student you had?—I was asked if I could give an example of one who had not previously been brought up on the land, and I gave that as one of the most recent.

1362. Can you speak as favourably of those who have been brought up as agriculturists?—Most certainly—without the slightest hesitation.

1363. I should like to know what practical work you give students?—They do as much practical work as is possible for them without interfering with the lecture work; for instance, they all get a little turn at cutting and laying a hedge properly, and making up a ditch and the bank; they all get a little turn at draining, and they are all shown how to set and work a plough and milk, and how to bring up calves until they are a year old, and so on, but every endeavour is taken to make it educational and not merely manual.

1364. You spoke of the future career of those who have had a college training. Will you give me those figures again?—About 73 per cent. are actually in occupation of the land; 15 per cent. have gone to land agency and land management; 7 per cent. have emigrated; and 4 to 5 per cent. have drifted into other businesses.

1365. What sort of farmers would the 73 per cent be. Are they large farmers or ordinary small farmers or what?—I should say they began in a smallish way in some cases; others farm up to 500 acres.

1366. £36 is rather a large fee for some of these small farmers. How do you manage with the poorer class farmers?—I think I have said that a good many scholarships are awarded by the Cheshire County Council covering the whole cost of board and tuition.

1367. How many do you think there are altogether?—Twelve per year.

1368. And they are always filled?—Yes, they are always filled, although of course since we have been able to get so many paying students we have reduced the scholarships to the most deserving cases only.

1369. With regard to the uses of the college farm for teaching purposes, you have told us that the farm consists of 100 acres. How do you divide it for teaching purposes?—It is worked on the five course rotation, in keeping with the usual custom of the best farms in Cheshire. We grow many varieties of potatoes, mangels, wheats, oats, barley and live stock.

1370. Is any portion of the 100 acres used as an experimental farm?—The whole of it really is worked as an experimental farm primarily.

1371. Then I suppose we may take it you cannot make much profit out of it?—No; I do not think you can expect an experimental farm to pay.

Mr.
T. J. Young.
2 May, 1907.

Mr.
T. J. Young.
2 May, 1907.

1372. Dairy teaching I think you said is also done ?—Yes, but most of the dairy instruction is carried out at another institution.

1373. (*By Mr. Middleton.*) I was not quite sure about the number of your students. You gave us an average number of 125 per annum ?—Yes.

1374. Then you mentioned that at present you have 41 in residence ?—Yes.

1375. You arrive at the number by multiplying the terminal number by three, is that it ?—Yes.

1376. Can you give us the number who actually reside with you for three years, it is about 41 for one year ?—Yes. Nobody comes for a shorter period than a year normally. Of course, there have been a few cases in which some family reason has caused them to leave us before, but otherwise not.

1377. So that you have practically about 40 students a year ?—Yes. We can contain 41.

1378. The course is three years ?—Yes.

1379. That means you have an entry roughly of 16 every fresh year ?—Yes.

1380. Is the number of scholarships 12 per annum ?—12 are offered per annum and the best are selected out of those.

1381. Do your students keep any note books in connection with their practical work ?—Yes, they have to pass an examination in practical work. All the different heads of the subject are set out and they are examined in each one, and they have to pass it. If they are found satisfactory then they do not need to take the course again and they are put on to something else.

1382. You hold practical examinations at different periods ?—Yes. Perhaps a student has been taking calf-rearing for some time, and he may ask me to put him through his facings, and if I find him competent, I put him on to something else.

1383. How many practical subjects have you ?—Feeding calves, stables, pigs, milking and management of dairy cows, and sheep—five altogether, besides land work.

1384. Before you allow them to enter for the diploma they must have satisfied you that they are competent on those practical subjects ?—That is so.

1385. And get certificates signed by the Principal ?—Unless they have got their books signed up with all the principal heads in.

1386. (*By Mr. Davies.*) I understand that the college is under the direct control of the County Council ?—Yes.

1387. Do the County Council carry out any county work besides in the way of lectures ?—In horticulture.

1388. There is a dairy school in the county in addition to your college ?—Yes.

1389. No agricultural work is done in the way of lectures ?—No.

1390. That is the reason why you desire to have an extra man for experimental work ?—Yes, I think that would be most useful.

1391. There are no short courses at all in the college ?—No. I ought to say with regard to those short courses that I am hoping to organise an evening short course for farmers' sons who are not able to attend the long ones—a course of perhaps 20 lectures in the winter. That may be of interest.

1392. You told us that the County Council award 12 scholarships every year. What examinations are held on the results of which those scholarships are awarded ?—There is an examination on general knowledge, elementary mathematics, writing, composition, and those sort of things, and then I give a *viva voce* examination as well.

1393. The scholarships are awarded on the result of that examination ?—Yes.

1394. Do they last for more than one year ?—They are renewable for the complete course. They are awarded for one year to start with, but if the student's work is satisfactory they are extended for three years.

1395. Do you pay any of the pupils for the actual work they do on the farm ?—No.

1396. What relation would your diploma bear to the National Diploma of Agriculture ?—It is pretty much of the same stamp except that it takes in one or two other subjects.

1397. You told us that you had a lecture-room especially

designed for live stock, and in which you give lectures ?—Yes.

1398. Do any of the farmers in the neighbourhood come there and attend these lectures ?—It has not been built long, but I am hoping in time they will. It has not been on trial long enough yet.

1399. You have never had any stock-judging by outside farmers ?—No.

1400. (*By Mr. Medd.*) You have a very successful horticultural side to your work ?—Yes, it has always been so.

1401. That is under the superintendence of Mr. Neild ?—Yes.

1402. The instruction there is of a very practical character ?—Yes, I think so.

1403. I believe the people from the horticultural side of your college have very little difficulty in obtaining good employment afterwards ?—I do not think they have much difficulty.

1404. The terms are the same on both sides ?—The fees are the same.

1405. What is about the proportion, how many pupils have you now on the horticultural side ?—Seven or eight.

1406. And the remainder on the agricultural side ?—The remainder on the agricultural side.

1407. To go back to the training of elementary teachers, before you went to Holmes Chapel, they had continuous Saturday courses there ?—Yes.

1408. The success of those courses was so great that they then decided to have courses at centres throughout the county, and they have now courses at six different centres ?—I have no knowledge of whether they were a success, but I believe they were.

1409. I think some time after they began they were held at Owen's College, but now the benefit from those courses of training has been realised so much, that they have them at six centres in Cheshire ?—I am not aware of it beyond the school gardens, of which there are 20.

1410. The inspection and supervision of school gardens at the elementary schools is done by your staff ?—Yes, by two of our staff.

1411. Has it given you any idea of the character and quality of the work done at your schools ?—It is rather early to judge because we have only just got them practically started, but there is a scheme drawn up to which they are to adhere, and they are visited by our instructor once a fortnight.

1412. It is thoroughly systematised and in working order now ?—It is.

1413. It is not left to the individual efforts of the managers of the schools ?—No, they have to adhere to the scheme.

1414. Every effort is made in your county to systematise the instruction in horticulture, from the elementary schools upwards ?—Yes.

1415. Can you say the proportion who come to you from the elementary schools ?—A small percentage come from the elementary schools. Most of those, I might say, go into horticulture.

1416. In addition to the defective arithmetic that they display as you told us, are there any other points in which as a rule the elementary school children are defective ?—I do not know that it is confined to the elementary school children.

1417. No, but take them first.—There is a serious deficiency in spelling mostly.

1418. In regard to application what have you found ?—My experience is that pupils from the elementary schools, especially those that come with the scholarships, are the worst workers ; those who pay fees are the best workers except in a few instances.

1419. Have you had any opportunity yet of judging whether there is any difference between the quality of the boys from the elementary schools where they have gardens, and have had rural teaching, and the quality of the boys from an elementary school where they have not had a garden and no rural teaching ?—I have not had an opportunity of judging of that yet.

1420. In the secondary school students you find a deficiency in arithmetic and mathematics ?—Yes.

Mr.
T. J. Young.
2 May, 1907.

1421. Do you find the same want of application in the scholarship boys?—I say that my experience is that the pupils that come with scholarships are the worst workers, and that those who pay fees are the best.

1422. Generally people value what they pay for most?—Yes.

1423. In regard to anything in the nature of a general average of intelligence in those boys who come to you first from the elementary schools, are they wide awake and alert, or are they dull and lethargic and uninterested?—I think I should describe them as fairly wide awake and intelligent.

1424. And the secondary school boys?—I think they are much the same.

1425. (*By the Chairman.*) What becomes of the students who take the horticultural side: what is their after career?—A few of them might have property of their own that they want to plant up. At the present time I think there are three who own some land and want to grow fruit upon it, and the remaining five will have to go into gardens and work themselves up into a position of head gardeners or something of that kind.

1426. Has it ever been contemplated to give at your college short winter courses for another class of students?—Yes, that is a thing that will have to be met, and I am arranging this winter to give evening lectures to farmers and their sons who are unable to attend the ordinary courses.

1427. Do you think that will be successful?—I am hoping so. At any rate, I think it is a thing that ought to be tried.

1428. Your committee are in favour of the attempt being made, are they?—I feel sure that they will be. From what I have heard from time to time I think they will welcome it.

1429. Are there any local committees in Cheshire for the purpose of giving agricultural lectures or agricultural education by experiments?—No, no local committees, but a good many people take an interest in it. We have no local committees organised for that purpose.

1430. I suppose you would say that an organisation of the local committees would be desirable?—Yes, I should say perhaps it would, although the county is not a very large one.

1431. All your students are not resident, are they?—Yes, they all are resident.

1432. Would you not admit any non-resident student?—The question of accommodation is rather a difficulty. We are intending to build accommodation for about 16 to 20 additional students. Plans are being prepared now for building additional accommodation.

1433. At present, as regards labourers in Cheshire, there are no organised lectures given to them?—No. An endeavour is being made to educate the tenant farmer in the hope that he will carry the instruction he gets to his workmen in time.

The Chairman. Lord Egerton is here, and I hope the Committee will allow him to state his experience in the county.

Lord Egerton. I know in my own school there are lectures given and agricultural instruction is given, and the boys are taught by means of a herbarium the names and uses of the different grasses, and I have seen books in which grasses are all tabulated and the names given and a general description of them. I know that lectures have been given, and I think the county council have also given some lectures, but I am not certain about that.

The Witness. Not during the last two years; they used to do it.

Lord Egerton. I am not prepared with any definite information, but speaking from my general knowledge I know they did give them, and I know in my own school

they have certainly been giving lectures on the elementary principles of the land and the soil and the products of the soil, and grasses, and so on—of course ours is essentially a grass county—and the use of manures especially applicable to grass land.

1434. (*By the Chairman.*) Can you tell us why those lectures were discontinued?—I think the main reason was that they had covered the ground pretty fully, and that the attendance was not large; that is my recollection of it.

Lord Egerton. My impression rather was that it was because they were in the habit of giving lectures on different subjects. Sometimes it may be an agricultural lecture and sometimes a St. John's Ambulance lecture, and then something else, but I do not think they have lost sight of it altogether.

1435. (*By Mr. Latham.*) From your remarks might we take it that your scholarships are rather disappointing?—Yes, some of them; I do not wish to condemn the scholarship holders at all, but as a rule I found that the scholarship holders were, if anything, worse workers than those who paid for their instruction.

1436. I suppose they would be rather of a lower class, would not they?—Yes, perhaps.

1437. More difficult to teach, and less anxious to learn?—Yes, I dare say that is true.

1438. Have you given any outside lectures to farmers in the market towns?—The staff do occasionally, or fairly frequently, give lectures in a private capacity when invited to do so at farmers' meetings and things of that sort, but we have no organised system.

1439. When they have been given, have you found that the lectures have been well attended?—Yes, I think fairly well attended.

1440. (*By the Chairman.*) I see in the horticultural department that a new section of the fruit plantation is being devoted to experiments on trees planted in arable land and in grass. Is that with a view to giving encouragement to the planting of orchards?—I think it is chiefly to demonstrate the difference in the growth of trees when planted in a grass crop and a clover crop and without any crop at all; there is half an acre of that.

1441. Does that apply to the agricultural side as well as to the horticultural side?—Yes. The agricultural side receive horticultural instruction, but they do not do all the detailed work that the horticultural students have to do.

1442. Has that gone on long enough to enable you to state the influence that that has had? Has that influenced the farmers in the way they plant their trees?—In one instance it has most decidedly. Of course I have not been in Cheshire very long—only three years—but in one instance it has influenced a farmer, who has planted apple trees in his hedges all over his farm.

1443. (*By Lord Barnard.*) With regard to the scholars who are sent to the college by the County Council, do you make any report to the Education Committee of the Council as to the progress they are making in the course of their studies?—Yes, I report quarterly; especially if there is any cause for a strong report, if their work is not good.

1444. Is there any condition in the award of those scholarships that the holder must perform his duties diligently to the satisfaction of yourself?—Yes, that is a very strong condition.

1445. So that if the scholar was idling, or neglecting his work at all, the scholarship would be withdrawn?—Yes; I sent 15 down when I first went there. If the scholarships are not well held they are dismissed.

1446. (*By Lord Moreton.*) Is it obligatory upon the students at your college during their holidays to spend their time on farms?—It is not obligatory, but a good many of them do go during their holidays and get practical experience on other farms.

Mr. G. W. HILL, called and examined.

1447. (*By the Chairman.*) Are you connected with the College at Holmes Chapel?—Not at all.

1448. You are prepared to give evidence as to the use to which the college is put by the agriculturists in the county?—Just so.

1449. Will you mention to the Committee what your experience is with regard to the college?—I have known this college ever since its commencement as a college, and I have noticed the increased interest that farmers have taken in the college for a considerable time. There did not

Mr.
G. W. Hill.

Mr.
G. W. Hill.
2 May, 1907.

seem to be much interest taken in the college at first, but now I find that there are more applications for advice, and I see that farmers are sending more samples to the college every year to be tested for purity.

1450. That means to say the farmers understand the practical importance to them of the agricultural side of the college?—Yes; it is getting more widely known amongst farmers every year, and if any man has anything wrong, as he thinks, with his stock, or he wants his samples tested, he does not hesitate now to send them to the college; he is getting to understand more that the college is of benefit to him.

1451. Is there a general approval of the reform which was introduced in the management of the college?—Yes, that is so; that is my knowledge.

1452. Have you any suggestion to make with regard to the method of instruction at the college, or in what way it could be made even more generally useful than it is now?—I am connected with several large bodies of Farmers' Clubs throughout Cheshire—I think three—and I should like to see lecturers from the County Council College at Holmes Chapel attending some of those meetings. They get largely attended by farmers; in fact, entirely attended by farmers.

1453. At those farmers' meetings various subjects are discussed, I suppose?—Yes, and I should like to see lecturers from the County Council College come there. Sometimes we get lecturers from London and other districts, but if we could call upon the County Council to supply us with a lecturer I think it would be very greatly to our advantage in many cases.

1454. Would you like those lectures to be systematically organised?—I would.

1455. (*By Lord Barnard.*) Are you a farmer?—Yes. I have been a farmer all my life, but retired last autumn.

1456. Are you a member of the County Council?—No.

1457. I understand from you that the farmers are more and more inclined to send samples to the college for analysis?—Yes.

1458. In fact they prefer that to the procedure provided for them by the Fertilisers and Feeding Stuffs Act?—Yes, I think so; I myself sent about 22 samples this year, and I sent about the same number last year.

1459. Is there any difference in the fees? Does the college charge a fee, or do they do it for nothing?—In some cases they do it for nothing.

1460. The county analyst would charge a fee, I suppose?—There would be a small fee to the county analyst.

1461. (*By Mr. Lamont.*) Although you are not on the County Council yourself, can you tell me whether there are any farmers who are members of the County Council?—Yes, I know there are several.

1462. So that, if there is a general desire that lectures should be given, they would have an opportunity of voicing the desire before their brother councillors?—Yes.

1463. I suppose, if there were any desire against it on the part of the County Council, it would not arise from any disapproval of such work?—No, but I do not think the farmer likes to think his rates are being increased for those lectures.

1464. Therefore your view is that it ought to be done, but by a grant if possible from the Board of Agriculture, and not out of the rates?—Yes, that is my opinion.

1465. (*By Dr. Somerville.*) Have the young men

who have gone through this school at Holmes Chapel proved a conspicuous success among the farmers round about?—Those that I know are certainly intelligent young men; they have done very well. I know several of them and they know things that other farmers do not know.

1466. Do they manage their farms well, and, so far as one can see, make them pay?—Yes, so far as one can see.

1467. I suppose the college-bred farmer is not now regarded with any sort of suspicion in Cheshire?—At first I am afraid that was so. We thought the practical man had a great advantage over the scientific farmer, but now we are working round to the opinion that a farmer must understand thoroughly the scientific point of view as well as the practical point of view.

1468. So that landowners would have no hesitation in letting their land to men who had had their training in Holmes Chapel College?—He would probably want to know something about his banking account, first of all.

1469. Do you think that scientific agriculture is being appreciated more generally among the rank and file of farmers' sons in Cheshire than it was in the old days?—I can mention it in my own case; my land was growing a certain class of grass, and I could not understand why it was, so I approached the principal of the college and he told me that it wanted lime, and I used lime all over the land, and I found that that was exactly what it did require.

1470. Your neighbours, who would know, no doubt, of your taking advice from the college staff, would be more disposed to follow your example, I suppose, after that?—All I can say is that all over the district they used lime on their land after that with the best results.

1471. May one take it that the prejudices against college education have practically disappeared now?—That is my opinion; there were great prejudices at first, but they are wearing down, because they see such really good work being done by the college at the present time.

1472. So that really the most pronounced type of old practical farmer would like his son now to go through the college course?—I believe that is the opinion of the farmers.

1473. (*By Mr. Staveley-Hill.*) You have spoken of the advisability of having lectures all over the county; I suppose that is for the benefit of young farmers?—Yes.

1474. Do you think in Cheshire there would be any advantage in having lectures for the labourers?—I am afraid you would not get the labourers to attend—not largely. After their day's work they do not seem to want to go to meetings.

1475. We have had some evidence from Essex this morning, and I should like your opinion with regard to Cheshire on that point.—I am afraid we should not get them to attend. A few would attend, but not the quantity we should like to see.

1476. (*By the Chairman.*) Is there any co-operation among the farmers in Cheshire?—This last 12 months there has been a little co-operation, but not to any extent. I presume you mean in buying and selling?

1477. Yes. The Co-operative Supply Association, I understand from Lord Egerton, has been in operation for the last 25 years?—Yes, that is so—at Nantwich, and it is doing tremendously well; last year, I believe, they turned over £103,000.

1478. Is that co-operation also applied to the creameries?—No; I think not; I do not know of any.

FOURTH DAY.

Tuesday, 7th May, 1907.

PRESENT:

The Right. Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman.*)

The Lord BARNARD.

The Lord BELPER.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor W. SOMERVILLE, D.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary.*)Mr. H. FRENCH (*Assistant Secretary.*)

Mr. A. D. HALL, M.A., called and examined.

1479. (*By the Chairman.*) Mr. Hall, you were at Wye, I believe, and I should like to put a question to you. What was your experience of the percentage of farmers' sons who attended the Wye College?—I could not give you the statistics, but I should say, offhand, probably about 40 per cent. were the sons of farmers.

1480. What is your opinion of the work you conducted at Wye? Which part do you consider the most valuable to the farmer?—Well, the man who was actually farming at the time in Kent was most interested in the experimental work. For example, in connection with hop-growing, there is no doubt we got more in touch with the local farmer by going about experimenting with hops and discussing hop matters than in any other way. When we first opened the college we met with a great deal of opposition and prejudice. But we took up the question of hop-growing scientifically with a great deal of energy, and so we gained the confidence of some of the more important farmers—and the important farmers in Kent are hop-growers. Of course this outside experimental work was only a small portion of the college work.

1481. And what further development do you think could be given to the work at Wye?—Oh, I think the work at Wye is going on on perfectly sound lines. It is getting a big class of students that it is educating for farming and others for administrative work. Then it continues its experimental work amongst the farmers and the fruit and hop-growers.

1482. And what do you find is the attitude of the farmer now?—His attitude has entirely changed since we first began. At starting we met with very considerable local opposition merely because the farmers were under a misapprehension of what we wanted to do. But I am quite sure when I left Wye, and at the present time, the larger farmers and the people with whom we came into contact were entirely on the side of the college. They believed in us, they sent their sons to the college, and recognised the valuable work that we were doing.

1483. Were any local lectures given?—Yes.

1484. What was your experience of the attendance at those local lectures?—The college had grown out of a system of local lectures. While the college was being established, the lectures were going on and I was one of the lecturers. These were given on general topics—agriculture, chemistry, feeding stuffs, manures. They were never very successful, and we eventually dropped them entirely in favour of other courses dealing with actual experiments that had been carried out under the auspices of the college; that is to say, short courses of free lectures about hop-growing that dealt with our particular experiment, courses on some points connected with barley, and similar special courses of lectures based on local experiments and first-hand information were extremely successful, though not, perhaps, numerically. You might go and give a lecture about barley, and perhaps you would have ten men; but they would include all the biggest barley-growers in the district. I can recall such a case where there were, perhaps, only ten people all told, but it is worth while going just to talk to these men. I am a disbeliever in general courses for farmers, such as agricultural chemistry, but a very special course is extremely useful if there is some first-hand information behind.

1485. Therefore, your opinion is that although the attendance is small, still the lectures are of great use?—They are very necessary to keep the people in touch with the collegiate centre. If you are working a wide area you cannot persuade farmers to come to the college often. Sometimes they never hear of it, and it is extremely difficult to get them to know that such a place exists, or what facilities the place offers to them, and I know of no other way of getting them to know other than by doing a certain amount of lecturing.

1486. You consider the value of these lectures is that they enable the college to get in touch with the farmers?—I think they are very useful in that respect.

1487. Was your experience that the staff at Wye was adequate?—We started with a very good staff. We always had a good staff; in fact, we started with a staff much bigger than the numbers justified, and grew up to it.

1488. Then do you consider the grouping of the counties for the purposes of agricultural education should take place through the instrumentality of an institution like the college at Wye?—Oh, yes, certainly.

1489. Then I think you have already mentioned that you consider there is a great advantage in the experimental work which is carried on by an institution such as that at Wye?—Yes.

1490. Did you consider that the grants allotted to Wye were sufficient?—My time was a long struggle against poverty, because we were a rapidly growing institution working on a scale that had never been anticipated; but I think we were very well treated. The counties grumbled but paid, and they have increased the grants since I left.

1491. Are you of opinion that the Board of Agriculture should grant more for the purposes of agricultural education?—Oh, certainly, in the sense of seeing that it is spent on education. I don't want to see the Board of Agriculture laying down a programme of work or anything of that kind. I think it is desirable there should be as much local flexibility as possible in this education. But I do want to see Councils which do not spend anything at all on agricultural education forced to do something and come into line. There are many Councils—there is one notorious case, West Sussex—where they do not spend a penny on agricultural education of any kind, neither collegiate nor lectures, nor anything else. I think some means ought to be devised by which, if the local authority won't spend the money, the Board of Agriculture should step in and do it for them.

1492. (*By Lord Belper.*) Do you suggest the counties should put the whole of the expense on the rates?—The county authority is at liberty to devote the "whisky money" to the relief of the rates.

1493. You mean the money they get from the Treasury grant?—Yes.

1494. (*By Mr. Medd.*) I believe this is the point, that West Sussex does, of course, allocate the "whisky money" to education under the Act of 1902, but none to agricultural education; that's the point, is it not?—Yes.

1495. They spend it on education, but ignore agriculture?—I don't think they spend the whole of the money. In some counties they use part of it for the relief of the rates.

Mr.
A. D. Hall.
7 May, 1907.

Mr.
A. D. Hall.
7 May, 1907.

1496. (*By Mr. Latham.*) But if the money is spent on agriculture, it does save the rates?—When I was concerned with it, no expenditure on secondary education fell on the county, and the money went to the relief of the rates.

1497. (*By the Chairman.*) That is your experience?—It was.

1498. You don't want the Board of Agriculture to prescribe for the counties?—I think the Board of Agriculture can do a great deal of good in giving advice and pointing out that certain types of education have been tried and failed, and certain other types are likely to succeed; but I think you must leave the local authority to run its own institution.

1499. Do you think the type of institution must be influenced by local conditions?—Oh, very strongly.

1500. Then you are in favour of open scholarships being a condition of the grant?—That is rather a suggestion that I threw out to get over one very great difficulty, that these groups of counties each of them erect a barrier against other counties. A farmer in a particular district does not always find available the particular form of education that he wants. To take an example, East Sussex has a college of its own at Uckfield. At Wye hop-growing has always been rather a feature of the place, and a Sussex hop-grower, if he wants to send his son to Wye, is treated as an absolute outsider, and would be asked to pay nearly twice as much, if not actually twice as much, as if he were a resident in Kent. Again, I think there ought to be some way by which a man, if he lives in a county that only has what I would call a school of agriculture and he wants to get to a University college, there ought to be some ladder for him rather than that he should be called upon to pay the whole cost of education, since most of the colleges work on the theory that they will give assisted education to their own ratepayers, but anybody who lives outside the contributing counties must pay the whole cost of education as near as they can gauge it.

1501. (*By Lord Belper.*) Surely the counties that contribute funds for keeping up a college of that sort are entitled to send students on more favourable terms than those from outside?—Certainly.

1502. Then if you had established a college yourself, or had joined with any other county, they would be able to send their students to this college on favourable terms, in the same way as Kent and Surrey are able to send theirs?—I might say this: the Board of Agriculture contributes £1,000 a year to Wye.

1503. And to many others?—The Board might say, "This is State assistance, and in return you ought to found one or two open scholarships every year that shall be open to the country at large." The Board's grant is received from the country at large; it seems a pity that all these colleges should erect barriers, that there should be a number of watertight compartments.

1504. Does not the pity arise from the fact that Sussex does not spend any money in education which would be useful?—What I was rather trying to bring out was that a county may be spending money and may have got a school—

1505. Then you took the wrong case. Sussex does not contribute, as I understand?—East Sussex has a college of its own at Uckfield.

1506. You spoke of Wye; your county does not contribute to the expenses of that?—Oh, no.

1507. (*By the Chairman.*) You think the Board of Agriculture should, apart from the grants it gives to colleges, spend a certain amount of money on these open scholarships?—I think a little might be done in facilitating interchange by some system of open scholarships.

1508. That it should be open to everyone in England to send his son to any college, and that the Board of Agriculture should give money for that purpose, that is your point?—I think so. My point about Sussex, East not West, was this: Uckfield suits them very well for a certain type of work, and it meets the need of the county; but there are some farmers who want a different type.

1509. You think there are no scholarships available for them to send their sons to another institute. Then with regard to the diversity of type which you advocate, the result of that, of course, would be that there would be a great variety in examinations. There should not be one type of central examination, but the examination should correspond to the teaching given in these various institutes?—That if there is to be one central examination, it should be very flexible, and with strongly marked teaching interests represented.

1510. Your view is that the examination should entirely

correspond to the teaching?—Yes, I believe it should always follow the teaching.

1511. And not the teaching follow the examination?—Certainly not.

1512. Then your view is that agriculture should not be admitted in the secondary schools and the grammar schools, but that there should be general science with an agricultural bias?—Yes; I think agriculture is quite out of place in schools proper.

1513. They must have general education and no specific agricultural education?—Yes.

1514. And you consider that no agriculture is therefore wanted at training colleges but what is sufficient to qualify the teacher for the college experiments?—I think the difficulty that the elementary schoolmaster has in carrying out any teaching of this kind is not so much that he has not been given information, but that he has not been taught to go to work in the right way; he does not begin with the things round about him and do simple experiments upon them; he works from books and not from things. Now, if you taught him agriculture at the training college, you would only pour one more dose of information into him; instead, he should be taught how to use his fingers and do experiments, and to get into the habit of treating a subject simply and in untechnical language. The elementary schoolmaster has been brought up so much on books and so little on actual things, that his tendency is entirely to teach from books, even when dealing with the simplest facts of plant life. The teacher prefers to draw pictures upon a blackboard and dictate notes; but what we want him to do is to have things growing in plots and pots, to look at them, play with them, and make the children work with the thing itself. Of course the training college has an enormous amount of work to get into the time the teacher is there, and I do not think we ought to force him to take up any more subjects, but he ought to have one subject which would lead him into the method of experiment, so that he can develop his teaching afterwards on the right lines. So long as he knows how to experiment he can work out the rest for himself.

1515. When you were at Wye, were there any special courses of training for agricultural instructors?—For the training of elementary schoolmasters we had a series of summer meetings; the teachers were sent by scholarships from the County Councils, and we used to put them through a normal course. I used to go and teach in the elementary schools in Wye to see what could be done with the children, and on that experience we arrived at what I called a normal course—dealing with the way a plant grows, and then we used to make the teacher do experiments nearly all day for the two or three weeks he was at the college.

1516. As regards the higher agriculture, you consider the course at Wye was sufficient, and there was no need for any special addition for those who afterwards wished to enter upon teaching?—Well, I am afraid there was. I do not think the agricultural college is quite the place to draw your teachers from for other agricultural colleges.

1517. You think they ought to go to the University?—For many subjects. For instance, I think the teacher of agricultural chemistry ought to have been a pure chemist and have gone through the ordinary training before he looks at agricultural chemistry; and, similarly, the teacher of agriculture ought to have some working knowledge of farming beyond what he may have learnt at a college.

1518. The teacher of agricultural chemistry should have been through the ordinary training at the University?—Quite so.

1519. Then are you in favour of what we might call winter schools for agriculture—short courses being given during the winter, which would be attended by farmers?—I think that represents a very necessary type of organisation suited to certain districts in the country better than to others. That is one of the types I have in mind as desirable, and they succeed very well, I think.

1520. (*By Lord Belper.*) I think since the 1902 Act the "whisky money" must be spent on secondary education. When it was first given, I believe there was some put into the rates, and not spent on education?—Of course, I am not really *au fait* with that side of the subject, but I judge from the reports. From the Annual Report of the Board of Agriculture on the Distribution of Grants, it is evident there are a number of counties which spent either nothing or a very trifling sum on agricultural education.

1521. My remarks do not refer to agricultural education. It might be spent on agricultural education or any other

education. I don't want to weaken your point. I only meant they could not spend it on rates now?—I quite accept that. I am speaking without knowledge of the state of affairs since the last Education Act.

1522. Of course, with regard to the college life at Wye, I suppose you instanced it because it was a college in your own neighbourhood and you knew it?—I was Principal.

1523. You mentioned that because you were conversant with it?—Exactly.

1524. Of course there are many colleges besides which are receiving grants, and if those colleges were obliged to give scholarships to enable the counties outside to send in students, it might have the result of limiting their scope?—I don't anticipate any large number. I want to see a chance given to the farmer. I take it a farmer as such can never pay for the education of his son, or very rarely. It is a very expensive form of education.

1525. I quite agree in your view. My only point was that when a county spends a great deal of money it is rather hard on them if they are to have imposed on them students from other counties.—I know the difficulties in the way.

1526. (*By Lord Moreton.*) You spoke of the local feeling when that college was started; was that entirely owing to the suspicion that was sometimes supposed to exist in the farmer's mind with regard to scientific agriculture, or any particular local circumstances?—I don't think there were any local circumstances; it was merely the general idea against "bringing these people here to teach us our business."

1527. On the question of teaching book-keeping at institutions like Wye, how far do you think it desirable to teach the ordinary agricultural student book-keeping? May I put it in other words? Is it necessary in your opinion to go quite so far in teaching book-keeping as is done in other schools?—I feel the whole system of agricultural book-keeping wants reforming at a place like Wye. Now in my time the custom was to put a man through the mill of ordinary book-keeping by double entry just as if he were going to be a merchant or anything else. Well, on the basis of some personal experience of my own, I do not think that book-keeping does any good to the farmer; it does not meet his case. I believe a good deal of the carelessness of the farmer about keeping books is because he can get no information out of them. What I want to see done by the men who are teaching in the colleges is to see if they cannot set this business of farm book-keeping on a fresh basis that shall give information to the farmer about the different departments of his business. Then I think there would be some justification for teaching it very thoroughly indeed, because the future of farming depends upon the farmer realising exactly what the different operations cost.

1528. May I take it that for the purposes of the ordinary farm you would be inclined to teach rather more book-keeping than is necessary for the farmer to possess when he fills up the paper for an income-tax appeal?—I think book-keeping should be a very essential thing, but I want to see it taught in a different kind of way.

1529. (*By Mr. Latham.*) You spoke of farmers, small and large; did you find the large farmers coming to you in any great force?—The smaller farmers did not come nearly so much. Much, however, depends on the style of farm; if a man had a small mixed farm with a few stock and a little corn, he had less to gain from a place like Wye than a man who was growing five acres of strawberries and ten acres of mixed fruit. There were a lot of things he could come and ask about, and we could help him. But if a man merely had grassland and kept a few cows, there was very little we could do for him. In that kind of business he did not meet with many difficulties about which he could appeal to us for help. I always found the more special the industry the farmer was carrying on, the more help he could get from a scientific man.

1530. You have taken a very great interest in growing cereals; won't your information help the small man equally with the big?—Well, he is less inclined to come, and it is more difficult to get at him.

1531. I want to know if you can suggest any means by which you can get at him?—Well, the only means I can see is by having experimental plots organised all over the district, and by having a regular system of travelling lecturers. I notice in France that they have a pair of Departmental Professors—each Department has two Professors—whose sole business it is to circulate and give information, and they have to deal with small farmers in a way we have not. On the whole they work by experimental plots and by lectures in connection with them, and by putting it in the hands of two men in each Department, whose sole business is to do this kind of work, they have

had more success in getting at the small man and giving him information than we have had in England, because they have it better organised. Only two or three weeks ago I was talking to a little farmer in Normandy—I think he farmed the equivalent of about 60 acres—he grew wheat amongst other things, and I asked him what kind of wheat he grew, and he told me he grew "square head." I asked him where he got it from, and I learnt that he had got it through the instrumentality of one of these experimental plots. He had been to see them, and the lecturers had procured for him varieties of the seed.

1532. I have very little doubt but that you hold much the same opinion as most of us who farm largely, that there is much advantage in changing seed?—That is highly desirable.

1533. It is difficult to impress that upon small farmers, but would they not get great advantage from it?—Yes.

1534. You said just now that the lectures were rather a failure; don't you think often they are far above the heads of these people?—I said the first set of lectures were largely a failure, because they were given by the wrong people.

1535. Too scientific?—I should prefer to say, too abstract. People like myself were sent to lecture, and we had not learnt our business. That is the plain truth of the matter. But when we had done a lot of experiments and had first-hand information to talk about, and had something new to say and some experiments to illustrate our remarks, then the farmer would come and listen; but he won't come and listen to lectures about nitrogen and phosphoric acid, and I don't blame him.

1536. Have you tried by the limelight to show the benefit of these experiments?—That I think can be done when you have got your basis of experimental work to talk about and make it special and local. You must not make lecturing too general.

1537. That is to say if you make it interesting they will come?—Oh, yes.

1538. Now you spoke just now of special education for certain districts, will you kindly explain what you mean?—I mean rather this. Take the district which I know best, the south-east of England. The men who are worth most attention down there are the big growers of fruit and hops, that is a class worth catering for. They are men with capital embarked in the business, and they are working a very highly scientific business, and so you are justified in that district in putting down a college and giving a highly scientific course like Wye does. But I know other parts of the country where the general run of farmers does not call for quite that type of education, and where it might be desirable, and it has been proved in fact to be desirable, to have something less scientific and shorter courses. I do not say less thorough, but not going quite so far, and more of a practical nature.

1539. You mentioned different fees, in and out. Where is the money to come from for those fees. The interchangeability?—My suggestion was that if the Board subsidised an institution like Wye or Cambridge, in return for that the college might be asked to found one open scholarship a year.

1540. You are speaking of the college that receives the money?—Yes.

1541. I was rather sorry just now to hear you make the remark that you did not consider farmers were in a position to educate their sons—has that been generally so?—I did not mean it quite in the sense you are taking it. I mean that agricultural education generally is a very expensive business. I should think the net cost at Wye is something like £150 a year, exclusive of capital outlay. Now I don't think the farmers, whose sons are there, as a class can afford £150 a year. You see in no other form of higher education that I am acquainted with, whether it is engineering, or law, or medicine, or anything else, does the student pay the whole cost of it. There are such a number of old foundations that you never pay the real cost of the education.

1542. After the farmers' sons have received the education that you are speaking of, do you find they go back to the land?—That depends. They do not, all of them. I should not think more than 50 per cent. of those receiving higher education, a University education, go back to the land and farm. Too many of them from my point of view take appointments, teaching, expert work, and so forth. There is rather a desire on their part to do something of that kind.

1543. And we may take it for granted that the scholarships that the Board of Agriculture would give would not

Mr.
A. D. Hall.
7 May, 1907.

Mr.
A. D. Hall.
7 May, 1907.

tend to help the ordinary farmer?—They might or might not.

1544. Can you give us any illustration of this question of book-keeping. You have been asked questions that I do not quite agree with. Don't you think book-keeping in regard to farming wants to be done just as well as book-keeping in commercial life?—Quite as well, but in a different way. What I mean is this, the ordinary book-keeping by double-entry shows you the state of your cash and your liabilities, and so forth to enable you to draw a balance sheet.

1545. I wish to know rather whether a certain kind of book-keeping is not necessary showing the cost of the different experiments and whether they answer or fail?—I only want to carry him a little further than that. The only system of book-keeping that seems to me to be worth much to a farmer is a system that would answer him questions like this: What does my manure cost me a ton to make? What does my grazing land return? What have the beasts that have been fattened in the fields paid me as compared with the beasts fattened in the yard? I have bought 20 Irish beasts and fattened them in the yards, have they made a profit or not? What is my arable land producing as against my grass land? I want to see the different departments dealt with separately. A man has a mixed farm, and he has certain departments of work on it, and he can increase his acreage in one direction and diminish it in another if he finds one crop or style of farming pays better than another. I want him to keep what in a big manufactory is called a "Costs Book," which will show what it costs to produce each article of manufacture. I want to see that applied to farming. That means recasting the whole method.

1546. I am afraid that our prices and the great variation of prices upsets all calculations?—Well, it does not entirely upset them. Of course we know it makes it very difficult. The difficulty in book-keeping for a farm is that many of the operations do not show an immediate return; if, say, you are growing a root crop, you do not get your money back in the roots, and some of it has to be spread over the next three years. There are a lot of contingent operations and a certain amount of estimated figures which the book-keeper has to include, if he is going to bring out a true profit and loss account. I maintain it can be done; in fact, I see it being done.

1547. (By the Chairman.) In one of your remarks you speak of the extent to which dairying is practised, to what extent is it practised at Wye?—I have no knowledge.

1548. (Dr. Somerville.) Was it the future elementary schoolmaster who took nature-study at Wye?—They were all men actually at work. They came up and spent their holidays. They had schools, and they were taking classes in their own schools at the time.

1549. Under the Board of Education?—Yes.

1550. Do some of them aspire to teach the principles of agriculture?—You mean under the Board?

1551. Yes?—Only the first stage. They are inspected, but not examined. You see an elementary school cannot send up pupils for those examinations.

1552. But do the elementary schoolmasters never start evening classes?—They do occasionally. I think again they do not come up for examination, but go for inspection. I think Mr. Dymond can tell us what happens. I know a large proportion of the men who used to pass through our hands had these classes going on in their own schools. They are bound to have something of the kind.

1553. Then does the County Council cease to keep in touch with these men to whom they have granted scholarships?—No, the County Council is in touch through its Inspectors of Elementary Education. You see the Kent or the Surrey Education Committee would pick out the teachers that it wanted to come to Wye.

1554. And, subsequently?—They would put on some pressure if they were not making use of the instruction they had received.

1555. They are not allowed to return to their school after having spent a special holiday without giving some return afterwards?—No, the provisions of the code forces all teachers to take some subject in the nature of a science and the code says it must bear on the local requirements. I think an elementary schoolmaster has a difficulty of getting out of doing something in the way of nature-teaching at the present time, if he lives in the country.

1556. That rather assumes that no work of this kind is taught?

(The Chairman.) I must ask Prof. Somerville not to deal with that. It is rather outside our inquiry.

(Dr. Somerville.) Then shall I be in order in asking whether in his opinion agricultural education will in the future be best conducted under the Board of Agriculture or the Board of Education.

(The Chairman.) Yes, that I can allow.

(The Witness.) I wish to see all the higher education still in the hands of the Board of Agriculture.

1557. (By Dr. Somerville.) Is it not somewhat anomalous that we have a great Government Department charged with the care of education and that we should find it qualified to deal with all education except agricultural education?—Well I am not afraid of that anomaly.

1558. What is the special argument in favour of agricultural education being placed under a special Board, and all other forms be subservient to the Board of Education?—Merely the argument that agriculture is rather a special thing which stands by itself. It is an argument of this kind. Take a University College with an agricultural side; at first the idea was to put all the agricultural students who came to that college through the same chemistry classes as the budding medical student and the budding engineer, and so forth. Well, it did not succeed very well. It has been found desirable, I think, in most places, to give the agricultural student his own special classes even in agricultural chemistry. And in the same kind of way I would rather like to see the Board of Agriculture stick to the higher education, stick to its own present form of control at any rate; it helps and advises and stimulates. I fancy agricultural education would rather get lost sight of and be swamped in the manifold duties of the Board of Education. I have never found townsmen and academic people show any very intelligent appreciation of either the position or the needs of agriculture.

1559. In your experience of the methods of other countries, do you know of a case where agricultural education is not placed under the control and direction of the Board of Agriculture?—I could not be at all certain. My impression is that in France it is the Minister of Agriculture who looks after all the agricultural education of the country other than in the elementary schools; but I would not be at all sure. I am simply speaking from my impression.

1560. You have taken a great interest in the conduct of higher examinations in agriculture, and more particularly, I think, you have given some attention to the present position of the National Diploma Board?—Yes.

1561. Do you consider that there is still much need for the continuation of this independent examining body in view of the fact that all the University Colleges teach agriculture, and that the Universities with Agricultural Departments, and the special Agricultural Colleges, such as the one at Wye, are now issuing certificates of their own?—I hold the day has rather passed for that central examination. Before the foundation of the colleges, when there were private students of agriculture scattered about the country, men working by themselves, it did an extraordinary amount of good in showing them what they had to work at, and so forth. But now that practically every agricultural student who comes up for that certificate has passed through one of these teaching institutions, there is less opening for such an examination.

1562. But if effect is given to your suggestion that winter schools of agriculture or some such secondary form of agricultural education should be developed, would not the pupils of these schools desire to obtain some certificate from an independent examining body to show that they come up to certain standards?—They would find an examination like the National Diploma rather unsuited to them, as candidates have to attain a very considerable standard in a lot of subjects all at once. I take it in a winter school students would come up two or three years in succession and take the thing in bits. I think a student would be better suited by the Board of Education examination rather than by the National Diploma.

1563. You don't think the national examinations conducted by the National Diploma Board might be modified?—There is one type of student it is suited for. When you are dealing with a man who comes off a farm and he gets his scientific education, as it were, casually, and from time to time, gets it up himself, then to pass the National Diploma means he must have attained a very high standard of work. He has had to take a lot of subjects, he has had to read what to him is very difficult indeed, and he possesses already that large body of practical information and

Mr.
A. D. Hall.
7 May, 1907.

knowledge of farming which really makes the scientific work that he gets up in this fashion useful to him; so it becomes an extremely good test for that kind of man. But the mere fact that there are a lot of subjects and it is all paper work, makes it very easy for quite another type of man. The clever boy with a scholarship, who has gone into an agricultural college, finds no difficulty in passing that examination, because he has been practised in cramming up subjects quickly and setting them out clearly on paper, while there is no opportunity of testing whether he has done the work he writes about. So long as you are dealing with the more or less private student who has practical knowledge of farming, and can confine the examination to him, then the National Diploma is a good type of examination; but it is a bad one for the college-trained or the school-trained smart schoolboy who is clever at passing examinations.

1564. The Board that we are referring to, I think, for the most part consists of representatives of the two great Agricultural Societies of England and Scotland, and comprises practical farmers, men who have an intimate knowledge of practical agriculture?—Yes, I think they are chiefly representatives. I speak without any particular knowledge of the present composition of the Board.

1565. Do you consider that the examination is a good test of knowledge of practical agriculture?—No; I think it is extremely difficult to devise an examination that shall test practical agriculture.

1566. But with a Board representing the two societies which are established primarily to promote practical agriculture, do you not think it desirable the diploma of the Board should be perhaps more essentially a certificate of practical agriculture than it is?—If they knew how to examine. You see it is only a man who is engaged in teaching who really knows what can be expected from a student. It is very difficult for a man who is engaged in the practical pursuit of his own business quite to appreciate how a student approaches that subject, and what he may be expected to know. The things which to him are indispensable and commonplace the teacher may know can only be attained by experience, and they are difficult things to examine about. And for the reason that agriculture is so much a business, and the practical man, of course, is bound to put the business foremost, it becomes very difficult to devise an examination that shall run alongside what is practical in teaching. Only a teacher who has been at his work a long time knows what can be done in the college and what has to grow by actual experience on the land afterwards.

1567. So you think that this Board fails for two main reasons, first that it does not contain the best educationalists, and secondly that its examining staff is not drawn from men who are actively engaged in teaching?—I think those are defects in the constitution. I should rather be inclined to base my objection to it more widely than that. On the whole, a general examination is very difficult, and this particular general examination has now no longer the class of candidates coming up for it for whom it was originally devised. If there is to be an examination it should be devised by men a certain number of whom are in touch with actual teaching, so that they can make it flexible enough to meet the very varied requirements of the country. You see, the two types I have in view are something like this. You get, say, in Scotland, a student who has come off a farm, who is fairly grounded in the practice of agriculture; you get a good many of them coming up and taking this examination, but they do not want the same method of examination as, say, the clever boy who has come out of a town or a small country grammar school with a scholarship, a smart boy who has all the art of passing examinations at his fingers' ends and can get up a subject with great rapidity; he wants a very different type of examination, and unless you have the teaching influence represented both among the examiners and the examining body, it is difficult to devise an examination that shall adequately hold the fair balance between these two classes of pupils. With a central examination it is difficult to avoid tempting the colleges to teach for examination successes instead of for the special needs of the locality and the class of students coming to the college.

1568. I think, perhaps, I may conclude you are rather disposed to modify the view you took up when addressing the London Farmers' Club some little time ago when you said, "The only general examination that exists in agriculture—the National Diploma—sins against every canon of good examining; it is out of touch with college curricula and teachers; it insists on a multiplicity of subjects each run by a specialist; it ignores all practical

work. This examination is the most serious hindrance to the progress of agricultural education our colleges are faced with to-day?"—I should endorse every word of that.

1569. (By Lord Moreton.) You stated in reply to Prof. Somerville that the Diploma Board consisted of practical men in contradistinction to teachers. You are aware Government representatives both of England and Scotland are on that Board?—I really do not know much of the composition just now.

1570. There is just one other question I should like to ask as regards the teachers examining. Of course there is no doubt it is the ideal thing, but does not a practical difficulty arise in this: that it is rather difficult to get good examining teachers whose pupils may not be sitting for the examination?—I think that is a thing which happens in all examinations. In higher examinations at the present time you expect sometimes to meet your own pupils. But there are generally co-examiners.

1571. In some subjects, not all. We have to take that into consideration as regards examiners?—But is there any objection to a man examining his own pupils? I was certainly examined at Oxford by one of my own professors. The same thing prevails in every other branch of knowledge and in every other profession in the country, an examiner does meet his own pupils. Take the University of London which I happen to know something about. It has been reorganising its examinations, and the cardinal principle is that in every examination there shall be an external examiner and the teachers shall be associated with him.

1572. I may take it you would feel more satisfied with the examination if there were two examiners in each subject?—Oh, I think it almost necessary sometimes to have two examiners.

1573. Then I may assume that you would have considered the very considerable increase in expense that would entail to the two societies that are running the examination. You would probably prefer to see that particular examination held under different conditions, shall we say conducted primarily by the Board of Agriculture, and possibly with an advisory committee?—I feel rather that the examination is not particularly wanted in view of the University degrees that are available practically to all the large colleges now, and that there also exists the Board of Education examinations which have been of recent years recast and revised, especially as the particular solitary student for whom the Royal Agricultural Society originally devised the examination hardly now-a-days exists.

1574. (By Mr. Medd.) You have had some experience of agricultural education both in France and Holland?—I know very little of the Dutch. I have just been to one or two of their colleges, some years ago, but I do not know anything of their organisation.

1575. But in neither of these countries have you ever heard of any difficulty as between the Department of Agriculture and the Department of Education?—Well I have certainly not heard it. I should not be in a position to hear it.

1576. As a matter of fact, are you aware that in both those countries all agricultural education other than what you may call rural instruction is under the Department of Agriculture?—That was my impression about France, but I could not be certain.

1577. Are you aware of any country in which agricultural education is under the Board of Education?—No, I have no knowledge. I cannot really say.

1578. The one essential thing, of course, is that there must be complete co-operation between those two authorities?—I should say certainly.

1579. If the existing system is maintained in England and the work of the Board of Agriculture be extended there must be complete co-operation between the two powers?—Yes, certainly.

1580. Well, now, can you suggest any definite way in which the Board of Agriculture could exercise any control over the allocation of the "whisky money" to agriculture?—No, I do not know how it can be done. I do not know what powers could be given to them or how it could be managed.

1581. Is it not probable that the local authorities would resent any control of that kind being exercised by the Board?—They would, probably, resent any attempt.

1582. I quite see your point, that it is grossly unfair

that certain local authorities should allocate no portion of their "whisky money," or only a trifling portion, to agriculture. Now do you think that that difficulty might be overcome to some extent in this way, if the Board of Agriculture declined to subsidise any institution in any county the local authority of which did not submit a scheme for the agricultural education of the whole county to the Board of Agriculture for approval and advice?—But how does that touch the case? The counties that are the sinners do not come to the Board of Agriculture for any subsidies at all.

1583. Of course we are hoping that the blank places on that map may be filled up, and we are hoping that other types of institutions may be established. Now, under the present chaotic condition of things there is no system at all. The suggestion which I put to you amounts to this, that no county would receive any assistance whatever from the Board unless that county submitted to the Board a scheme for the whole agricultural education of that county; that would be tantamount to the same proposal as yours, only it would work differently. The result would be the same. It would entail the submission of a definite scheme by every authority on application for aid. At present the Board is only, so to say, cognisant of the operations in that institution and not by the area served by the institution. Do you see the difference?—Yes.

1584. My point is this. Take the County Councils of Kent and Surrey, they are generally responsible for Wye. Under the existing conditions those authorities have not to give any account of the general agricultural education of these counties, but merely of the operations of Wye. I wish in future that those local authorities should have to explain to the Board the whole agricultural provision of the county, that the general scheme leading from the elementary school up to Wye is a condition precedent to any grant to Wye?—I do not quite see how it would work. Take the county of Hertfordshire. The county of Hertfordshire gives a small subsidy to Cambridge. You would practically say to the Cambridge Board, "We won't subsidise you unless the county of Hertfordshire, which is one of your contributors, submits its whole scheme to us." Are you not penalising the wrong people?

1585. No, I think not. Because we found the relationship of these affiliated counties to Cambridge is of the slightest description. Cambridge has no idea what is happening; it gives no advice; its Board has no control. My suggestion to you would entail a definite scheme for each affiliated county as a condition precedent to assistance to Cambridge. If Hertfordshire declined to submit a scheme, Hertfordshire would fall out?—Quite so. Hertfordshire would be likely to say, "If we are going to be under authority like this because we make a contribution to Cambridge, we won't offer it."

(Mr. Middleton.) If any such arrangement was proposed to Cambridge, we should say that we could have nothing to do with it.

(Mr. Medd.) You would lose the grant. But what I am endeavouring to explain is an initial step towards a system under which the Board of Agriculture would have some control, as Mr. Hall suggests, and also a power compelling the authorities, if they obtained it, to submit schemes.

(Mr. Middleton.) Then you must compel the counties who have the money.

(Mr. Medd.) Those institutions are in some cases the creation of the local authority, at any rate they are governed by the local authority.

(Mr. Middleton.) There are some institutions through which you could hit the counties, there are other institutions which would not affect the counties.

1586. (By Mr. Medd.) I take the case of Harper-Adams which, I think, has Staffordshire and Shropshire affiliated to it. Those two counties when applying for the grant for Harper-Adams for this year submit to the Board a detailed scheme of all agricultural education provided within their respective areas. Shropshire sends such a scheme, Staffordshire declines; then Staffordshire at once loses whatever advantages it has by affiliation to Harper-Adams?—I think that would rather tend to penalise the wrong people. Suppose a county was granted its share of the "whisky money," assuming you could arrive at what ought to be the share of agriculture, my idea was that if the county does not spend it, the Board ought to have some power of veto and say, "You shall not have it."

1587. My question originated in the endeavour to find how the Board could exercise the control you have in your mind. Now in reference to another subject in your *précis*, you mention three or four types which have been proved by experience; you have referred to the advanced college and to the winter schools. Now what other types do you suggest?—I think the types I had in mind were the colleges of university rank which may be either a department of a university college, or a residential college, then the school which has a parallel in the *école pratique* such as the Cumberland schools and the Bedford schools are types of; and the winter school, of which the Chelmsford is a type.

1588. In your Address at the Farmers' Club you used the term "farm school." You do not, of course, mean by that a "*ferme école*"?—No.

1589. You mean a school of the type of the *école pratique*?—Quite so.

1590. Do you think it possible to combine a school of that type with an advanced school, that is to say, could Wye incorporate a school of intermediate agricultural education for pupils from the age of 13 or 14 to the age of 16 or 17?—No, I do not think you ought to run the two together.

1591. Then you do not think that agricultural sides attached to secondary schools are good?—As far as they are trying to teach agriculture I do not think they are good from what I have seen of them.

1592. In your evidence before the Departmental Committee on Training Colleges in 1901—you were Principal of Wye then—you suggested a third year's course for teachers at Wye and you drew up a scheme, did you not?—I believe so.

1593. You still think it would be possible to provide a third year's course for selected teachers?—I think it could be done if a sufficient class was got together.

1594. Are you aware that such a scheme is now being drawn up at Wye?—No, I have no special knowledge.

1595. Then with regard to courses which you inaugurated at Wye, do you not think a course held on Saturdays throughout the year is likely to prove more useful than a short course of a fortnight at a time?—I think the two ought to go on together. You want your course at the college. It is only there you have your teaching plant, and you cannot bring students to the colleges on Saturdays throughout the year, the distances are too great.

1596. That difficulty has been overcome. They have had them continuously on Saturdays at certain centres. But apart from that, don't you think it an advantage to the teacher if he has an opportunity of studying agriculture or horticulture at all seasons of the year, so that his lessons may be appropriate to the particular season of the year?—Oh yes, there is a great deal in that: but not such a gain as would appear on the face of it.

1597. Now in your Address at the Farmers' Club, you drew attention to the really large amount of money which is expended upon agricultural education out of the "whisky money," and you referred to the amount wasted, can you kindly tell the Committee the directions in which you think there is a useless expenditure of money now, "a frittering away," you call it?—I think from the point of view of agriculture a great deal of the county expenditure—I think it has been mitigated of late a little—but still a great deal of the expenditure on teaching cottage gardening is rather a waste of money, and should not be regarded as expended on agriculture at all. A great machinery, as it were, has grown up for teaching horticulture to allotment holders all over the country, a machinery which is stimulated by prizes and awards for attendance, until the success of the work is a little bit fictitious. It all adds to the amenities of the country and helps the labourer to make a better living and so forth, but it is not agricultural education. There are a good many of these small classes which cost quite a disproportionate amount of money. In all cases I rather believe in trying to educate the master and leaving the education of the man in his hands. I do not think very highly of many of the practical classes that have been established in different parts of the country for matters like thatching and brushing hedges, and various operations of that description. I doubt if educational money ought to be spent on such matters. We have not much money to spend on education, and I want to see it

concentrated where it can tell most for the advancement of the industry.

1598. Then what would you suggest as the best organisation for a county working from the elementary school—putting that on one side—up to the collegiate centre, what kind of instruction would you supply as most appropriate for farm lads and young farmers working up to the collegiate centre?—I should, of course, want to see the nature-study carried on properly in the elementary school. And I think the continuation school ought to continue that form of work and get it more specialised. But so far as building up a ladder of instruction goes, I think that is to be done entirely by continuation schools with winter schools for short courses available for those who are wanting them. You see in any village which I know, at any rate in the South of England, the actual number of people engaged upon the land is but a small proportion of the residents in the village, and you cannot arrange the whole of the teaching for them.

1599. Then you referred incidentally to the Departmental Professors of Agriculture in France, and the good work they did in their several Departments, do you think it would be an advantage if England were mapped out by the Board of Agriculture and definite agricultural officials appointed under the Board for such area?—No, I think those men ought to emanate from the collegiate centres. I do not think you can lay down any definite rules as to their number or duties, but the Board of Agriculture in administering these grants to colleges at the same time gives advice, and if it put a certain amount of pressure on the colleges to strengthen their organisation in that direction, it would best help matters.

1600. You would not have those officials in any way subject to the central authority?—No, I want to see them working for the colleges and responsible to them.

1601. If you dislike the central examination, don't you see some difficulty arises from the various standards of the existing examinations; that, if each institution is to conduct its own examinations, there must be some difficulty in determining a standard?—Well, isn't that a difficulty that is inherent in life? Every university grants a M.A. Degree, but the value of that M.A. Degree has to be determined afterwards. No examination can guarantee that a man reaches a certain standard or belongs to a particular class, it can only ensure that he has been through a proper course of training.

1602. But don't you think some good might be done if the Board of Agriculture were to differentiate distinctly between grades of institutions, so that a place like Holmes Chapel should not be classified as of the same grade as Cambridge University?—Well, it would lead to heart-burning and trouble.

1603. But in the interests of education?—I don't think it would help matters at all if the Board labelled them. A college or an institution does not depend upon its label it depends upon the men it turns out.

1604. Have you considered whether an examination of the type of the Institut National Agronomique would be a good type of National Examination?—I do not think it would unless you first get the institute to prepare for the examination.

1605. But if we had an institute of that type, it would be a fitting body to hold a central examination?—Then I should say again that the education should be a necessary preliminary to the examination.

1606. Then in regard to experimental work, do you believe a central committee to collate and advise upon the experimental work of the country, provided with funds to promote it, would be an advantage?—You are speaking of experimental work, in what sense—in the sense of research or what?

1607. In the sense of research, and the experimental work now conducted at various institutions. At present as I take it, each institution works alone. I merely suggest a central council or committee which would collate the work and under the authority of the Board be able by subsidies to promote it, and so forth, and bring each isolated part of the work into line?—If it has a sum of money to subsidise research with, I can see the committee might be very useful; if the proposed committee is going to try to organise the research, I think it would be mischievous. It might prevent overlapping and do good in that way, but its function should be to assist any good work going on. In the end research is done by individuals and not by a committee.

1608. (*By Prof. Middleton.*) You expressed an opinion

that agriculture was out of place in secondary schools?—Yes.

1609. You spoke as an examiner?—I spoke partly as an examiner, and I have been invited occasionally by the Board of Education to inspect.

1610. You have direct knowledge?—I have seen and inspected some of these schools, and I thought the less they do of agriculture the better—actual agriculture, I mean.

1611. You referred to your experience of the change of front on the part of farmers, and you have explained to us that when the scientific man knows what it is the farmer wants, that the farmer will come to him for information. You find no difficulty in getting at the farmer?—No difficulty in getting at the farmer when the farmer learns that the scientific man is not trying to teach him his business, but only to help him. They have to meet one another.

1612. That is your general impression?—I think you can see it all over the country.

1613. You said that your staff was adequate, that you had a sufficient number of men?—At the time we had an adequate staff.

1614. Was there any difficulty in keeping the staff together?—Well, our staff kept together for some six or seven years, and then it nearly all dispersed in a year or two. I think there is only one member of that original staff left at Wye. Speaking as a Governor of Wye, I see very rapid changes in the staff going on now.

1615. That is a difficulty which will tend to disappear, you think?—Quite.

1616. You referred to the value of open scholarships, your idea was to get men to come from other counties, I think?—Yes.

1617. Do you think that an open scholarship given after a high test would be likely to bring many students from other counties?—No. It might bring one or two, that is all. You get an occasional man who would be well suited by the place.

1618. As a matter of fact, do many County Councils permit their county scholars to choose?—Many counties which have no institution of their own do that now.

1619. Even those which have institutions in their own district would permit a choice?—That I have no experience of.

1620. You referred in some detail to the teaching of book-keeping, and you said the subject was treated too theoretically?—It is treated as if the farmer were going to be a banker.

1621. That is to say, he gets a course of instruction in the general principles of double-entry?—And it leads to nothing.

1622. Is not the great difficulty that the course is too short, and just when it ought to lead to something they stop?—All these courses are too short in that sense. But if you try to work too long on principles without seeing the application you won't get your students to follow it out.

1623. The great difficulty, as I understand it, is that you scarcely have the time to get the principles?—Well, I suppose most of the scholars put in a couple of hours a week for two years on book-keeping. The subject wants a good deal of time, depending on your material, of course.

1624. You would agree that for a farmer's purpose it is very necessary he should have thorough grounding in the principles of double entry book-keeping, or would you not?—Well certainly the principles of double-entry. I think all specialised book-keeping in the end depends upon a disguised double entry. I do not know that it need take the form of double-entry book-keeping, because in some forms it would not involve a ledger, but an analysis book. My point is rather this. You get the ordinary book-keeping examples, and you find the student is worried a great deal by questions of Bills and Discounts and things of that kind which do not come within the experience of the farmer; whereas such a vital point as the allocation of his labour is not dealt with at all.

1625. Of course points like allocation of labour and different systems of feeding, these things would be dealt with in ruled books?—That is it. You want to deal with that kind of thing very early and not get into the way of putting down feeding stuffs consumed among the losses.

1626. It really means the farmer must have sufficient grounding in the principles of book-keeping to be able to use his ruled books intelligently?—I will put it like this:

Mr.
A. D. Hall,
7 May, 1907.

Mr.
A. D. Hall.
7 May, 1907.

I do not think our men who are teaching book-keeping have ever set themselves to look at book-keeping afresh, from the point of view of the farmer. We know the principle which lies at the basis of all book-keeping; let us see if we cannot construct something which applies directly to a farmer.

1627. I think that is done sometimes, I think such books have been constructed?—I know there are a great many of these farm-account books. I have seen a good many of them, but they hardly meet my point.

1628. (*By Mr. Latham.*) May I ask one further question. I notice what you said about the outside examiner. Having had considerable experience in that, I should like to know why you look upon the outside examiner as a failure?—I do not look upon him as a failure, but he sometimes fails to appreciate the difficulties of a student. He looks at them from his own point of view. As principal of a college, I have had to do with different external examiners. They are as different as possible. You get one man who is exactly what you want; he is a good practical man, and he realises the sort of stage in his knowledge of farming the student is likely to be in and what kind of things he ought to know, and he can cross-examine his students, set the right kind of questions, and he will look for the right kind of information. Another man may be just as good a practical man, but for want of that appreciation of where the student is in his knowledge he makes a very bad examiner. I do not say it is confined at all to farmers; it is just as manifest in chemists. If you get a distinguished chemist to set an elementary examination, he will often set a very bad one indeed if he has not been doing any teaching or been in contact with students and knows the position they ought to be in.

1629. You do not look upon the outside examiner as a very useful adjunct?—That is it; he is an adjunct. That is what I want to see. I want to see the two together. Your outside examiner must be there to keep the examination in touch with the real thing; but I want the teacher to be there also to keep the outside examiner from asking things which a student ought not to be expected to know, and also to put the outside examiner up to some of the dodges of the student, because the student has his dodges too.

1630. Is it not a fact that the outside examiner generally submits several questions he is likely to examine the pupils upon, so that the teacher can have an opportunity of seeing whether they are proper questions? I think the teacher is altogether out of place and the outside examiner would be better without the teacher?—There I simply differ. I want to see them working together. I do not say necessarily the particular teacher, but I say a teacher.

1631. (*By the Chairman.*) I suppose you would be quite satisfied with regard to winter schools if an examination were held at the end of the course?—I think a certificate that the student has been properly through the course is sufficient for the purposes of the school. The student himself may be anxious to obtain some external distinction.

1632. The object of an examination is obviously to find out what the student has been taught, and what use he is able to make of it—to elicit that information?—Yes.

1633. Obviously the examination must be conducted by the people who have taught him in the first instance?—They must have a voice in it.

1634. They are the persons qualified to elicit what is the amount of information he has gathered. I take the Scotch view of the question, that the only examination which is worth anything is the examination which is conducted by the teachers, because they are the people who can find out what the man's qualifications are. It is quite obvious that with an external examiner the thing becomes quite haphazard. On the other hand there is no objection to the external examiner being present to see that the examination is being properly conducted. Your point is that the main object of the examination is to elicit what is the result of the teaching?—Exactly.

1635. You take that view?—I take that view entirely.

1636. You also take the view that in the present condition of agriculture and agricultural education we must not attempt as yet to systematise or over-centralise; you are in favour of leaving as much as possible to local initiative?—I feel that very strongly. The organisation wants to be very flexible.

1637. (*By Mr. Middleton.*) You have had a long experience as a teacher, and I should like to ask you this: Do you think it is a great advantage for a man entering an agricultural college to have had some training in practical agriculture beforehand?—I have never been able to make up my mind on that subject yet. I have often thought of it, but I cannot say even now that I would lay down a general rule. It depends entirely on the individual. There is a certain type of boy who does not settle down to work until he is about 18 or 20, and to have roughed about a farm and to know what to begin to work at is of enormous advantage to him. There is another type of boy to whom it is important that you should not break the continuity of his book work. I would not attempt to lay down any general rule as to whether the practical should come first or that the college should come first.

1638. Is it not the case in Germany that the tendency is rather for the agricultural student to get his practical training first, and also in the case of engineering students in this country?—Yes. Does not the residential college try to do that? I could quote cases both ways which have worked well.

1639. That was really my reason for asking you. I was wondering whether you had come to some general conclusion?—I think it depends upon the strata from which you draw your students.

(*The Chairman.*) Thank you. I am sure the Committee have appreciated the very interesting evidence you have given.

Mr. THOMAS COPE, called and examined.

Mr. T. Cope. 1640. (*By the Chairman.*) You are Chairman of the Leicestershire Education Committee?—Yes.

1641. And you are also chairman of the governing body of the college at Kingston?—Yes.

1642. Could you give the Committee some information as to the origin and formation of the Midland Agricultural and Dairy College?—Shall I tell you shortly how we came into being.

1643. Yes?—When this technical work first began we endeavoured to give instruction by lectures. We found that the instruction by lectures was by no means satisfactory. To a certain extent it was useful for butter-making, but when it came to cheese-making it was no use at all. Therefore Leicestershire had the honour of calling together representatives of the neighbouring counties to see if we could form a combination of the different counties so that we might work together. We succeeded in doing that, and we were lucky to secure the co-operation of Nottingham, Derby, and the Lindsey Division of Lincolnshire, and in 1895 the Duke of Devonshire did us the honour of opening our College. That is when we started. Then in the year 1898-99 we transferred

the agricultural department from the Nottingham University to Kingston. I might explain that previously there had been an agricultural department connected with the County Council of Nottingham, and we to a certain extent co-operated in that. Then it was found it would be better if the agricultural department was transferred to our college at Kingston, and that was done in 1899. It necessitated the erection of new buildings, lodgings for the students and things like that, and those buildings were opened by Mr. Walter Long in the year 1900. Then almost immediately we found very considerable pressure upon our accommodation, not only for the accommodation of the students, but also for the lecture-rooms; and in the year 1902 we decided to extend, and we obtained further grants from the counties for the extension. In 1903 we had already commenced the extension when a somewhat opportune fire occurred in a large barn which we had fitted up as well as we could for the purpose of dairying and matters of that kind, and therefore we were enabled to make a very much better extension than we otherwise should have done. That wing was entirely modernised, and now forms, I think, an exceedingly good place for our

Mr. T. Cope.
7 May, 1907.

- 1643a dairying work. Then in 1904 Sir Thomas Elliott did us the honour to open our extra buildings. That brings us nearly down to the present day, but I might say that at the present time we still feel the same pressure upon us.
- 1643b Whatever we do we seem to be caught up, and latterly our agricultural work has increased very considerably. To begin with, we put our whole strength originally into the dairying part of the business, and we have done exceedingly well with that. But of late years, we have gradually increased the agricultural work, and that has been growing upon us, so that now we are in the position, as I say, of really having considerable pressure upon our accommodation. Then I should like to say this: that we have had a certain amount of difficulty with regard to our finances because, while the capital payments and the current payments made by the County Councils are stationary, our work has really been constantly progressing, and I think we do it better. For instance, we have now a large laboratory, and we are able to do more laboratory work than we used to do with regard to agricultural chemistry. Then we have also done some good work with bacteriology, which, of course, has a most important bearing on the fermenting of cheeses. Then we have also increased our work in poultry-keeping, horticulture and bee-keeping. And then I do not think I should be wrong in mentioning that in order to make our dairying work complete, Lord Belper was good enough to give us the plant for cold storage. That, of course, has added a great
- 1643c completeness to our work. Amongst other courses we have courses for factory managers, men who wish to make it their business in life to carry on these things on a very large scale, and for that purpose the cold storage is a most important part of our equipment. Also we have added woodwork shops and ironwork shops, and in fact we are always adding something. Quite recently we have put up the electric light. Naturally enough there is, and always has been to a certain extent, rather a trouble with regard to our finances. And I am bound to say that from the very first the County Councils have co-operated very generously, and in the early stage when it was merely a question of their contributing out of the "whisky money," then there was no difficulty at all, because we had not to come on the rates for our work. Now that the Act of 1902 has become law, the matter presses more severely on the counties, and although I think our county does the work of education perhaps as cheaply as any, that is to say, we have a sixpenny rate for the primary education and only a penny for the higher, at the same time I have noticed a slight disinclination to again approach the counties for further grants out of the rates. And of course, my Lord, you know there are constantly coming more and more claims on secondary education, and therefore it becomes increasingly difficult for the counties to find further money. With regard to this matter of technical education, I do not know whether you would care to know the subscriptions given by the different counties at different times, I mean the capital subscription. The counties of Derbyshire, Leicestershire and Nottinghamshire originally subscribed £2,000 apiece, and the Division of Lindsey in Lincolnshire subscribed £1,000. Then in the year 1900, when the agricultural department was transferred, we obtained a further capital grant of £300 each, and the Lindsey Division also gave £300. In 1901, the three counties I have mentioned subscribed a further sum of £400 to carry on the extension which was taking place. In 1903, in order to meet the alterations which had been necessitated by the fire, and to add to our insurance money so that we might do more than merely re-build, the three counties subscribed a further sum of £300, making for those counties a total capital sum of £4,000, while the Lindsey Division contributed £1,300. That is really all the capital expenditure that we have had to go upon. I do not know whether there is anything further with regard to the work we do. Any particular details will be referred to by Mr. Blackshaw, the Principal of the college. But I might
- 1643d shortly state that we have for some time past given 6 weeks' courses of instruction in dairying, and 10 weeks' courses of instruction have been found very useful for the sons of farmers and others who have not very much time to spare, and we have graduated those courses so that a farmer's son could at intervals come for 10 weeks and take a different course each time. By coming at different times he gets 30 weeks' course, and we are able to give him sound practical instruction in that way with the least possible derangement of the farmer's work. We found at first considerable difficulty because farmers were naturally not willing to let their sons come to our college in the times when they were wanted for harvest. Very often the able-bodied sons and daughters work at home and help their fathers, therefore these 10-week schemes were provided to meet this, and we find them work very satisfactorily.

I am glad to say we have an increasing number of the very class we want to get at, that is the sons and daughters of the farmers. Besides those courses of 6 weeks and 10 weeks, we have a factory managers' course of 9 months, and that really is taken advantage of not only by those who go in for factory managers, but also we have had some of our pupils who go out to the Colonies and start teaching and agriculture out there. Latterly we have had besides, a two years' special course for those who wished to do more work in agriculture. For those who wish to have a more complete course—but there are not very many of them—we have made arrangements with the Leeds University to send students there to take a higher course in agriculture than we should be able to give. Of course you know the Leeds University has exceedingly good appliances for teaching chemistry and bacteriology, rather better than we have. We, on the other hand, I think, have more perfect equipment with regard to dairying. So we came to an arrangement by which if any of their students wished to have a more complete dairying education they might come to us, and we in our turn, if any of our students wanted a more complete scientific course than we were able to give, we could send them to the Yorkshire College. That, I think, gives precisely the general aim and objects of the way in which we are carrying out our work.

1644. Are the three counties who have taken a share in this work equally interested in the work?—I quite think so, to a certain extent. At first the students came rather more slowly from Leicestershire, but latterly, I am glad to say, they are coming rather more frequently, and I should like to emphasise this—it is rather an important point from the point of view of the Board of Agriculture—that we take students from outside the contributing counties who have to pay considerable fees, and we have had a very considerable number of them, especially at first, before the work became known in our different counties. And that is one reason, of course, why the finances are apt to get restricted, because you see how the capital contributions of the different counties are more and more taken advantage of and taken up by the counties; so of course we have not the same number of places to give to outsiders. The outsiders pay very considerable fees, and they really pay for their tuition. The more county work we get the more we are carrying on what we started for. But the great difficulty is with regard to finances. We have done a great deal of this work for outsiders generally.

1645. Are the four counties represented on the governing body?—Yes, they are all represented; they send three representatives apiece, except Lindsey, which only has two.

1646. Are you satisfied with the grant you get from the Board of Agriculture?—That is rather a difficult question, because, as I told you, we really are rather pinched for money, and we should very gratefully receive anything more you could give.

1647. You find it difficult to raise the money you want by the rates?—Yes, we do indeed, and I am afraid it will be increasingly difficult.

1648. (By Lord Belper.) With regard to the finances, I think you will agree with me that we have never spent money in enlarging the institution, or in any way adding to the expenses, until we were justified by the requirements?—That, of course, is so. We have really only done it on pressure. We have been constantly under pressure.

1649. In that respect we have been as economical as we could, because we have been obliged to justify to our counties, who have given a considerable grant to the institution?—That is so.

1650. Then with regard to the farmers. Of course you will agree with me that this college was started in this instance for the benefit of the farmers in the counties.—No doubt.

1651. What should you say with regard to the feeling of the farmers towards the college when the place was first started, and the farmers had their attention directed to scientific and agricultural education?—I should say there is a gratifying change. They certainly take much more interest in the work of the college now than they used to do, and in my own county they are coming in increasing numbers, and altogether I think the whole matter is really progressing very satisfactorily. We have certain centres for experimental work. And that no doubt is arousing interest among the tenant farmers, and with these experimental plots we have been in the habit of giving lectures. In the first place, we send down a

Mr. T. Cope. lecturer when the crops are at a certain stage, and he explains the object of these experimental plots. And then at the time when the crops are being lifted they come again and give other lectures, stating the results of the different experiments that have taken place throughout the county, and so the farmers take a great interest in these matters, and everything of that kind tends to help the institution, gets it better known, and we are better able to get more pupils. In fact, where we have given lectures we have nearly always found an extra crop of students come from that particular place.

1651b

1651c

1652. I think generally you will agree with me that when the college was first started the attitude of the farmers was rather hostile, and the opinion amongst them was that they had very little to learn from taking agriculture?—I should hardly call it hostile; it was certainly very passive.

1653a

1653. I think it has been brought home to them in some cases by some advice that has been given them when they asked for it, and in other cases when their sons and daughters have been at the college, that there is a great deal that they can learn from science as applied to practical agriculture, and lately they have shown a great interest in the work of the college?—I have been gratified by practical examples of that. I remember a farmer from Lincolnshire coming up and saying he must shake me by the hand, and how his daughter had done exceedingly well. They had never made more than 8d. or 9d. a pound for butter, and now they made 13d. and 14d., and they had obtained prizes. Then there was another farmer close to me whose cheese had done rather badly. He came to us for advice, and he was able to get afterwards quite a satisfactory price for his cheese, and it had improved in quantity as well as in quality. So one comes across concrete examples of that kind which are always very gratifying.

1654. With regard to students who come to the college, have you figures for the different years?—Yes. For the year 1896 there were 134; 1896-7, 188; 1897-8, 144; 1898-9, 177; 1899-1900, 154. Then we had the transfer of the agricultural students from Nottingham, and in the year 1901 the numbers went up to 217. Then in 1901-2 there were 282; 1902-3, 292; 1903-4, 316; 1904-5, 302; 1905-6, 337; and then this year, 1906-7, we have got a record number of 425.

1655. Those figures are not the actual number of students there at one time, but they are calculated on the classes?—They are calculated on the different classes.

1656. As a matter of fact, although we have been developing the college in order to be able to give the education we are giving and to take in more students, at the present moment we are perfectly full, and we have every prospect of requiring more accommodation than we have?—Yes, Mr. Blackshaw will tell you he has already more students' names down than we have room for.

1657. With regard to the dairy, that was in the first instance the object with which the college was started?—Yes.

1658. And we aim still at giving the highest possible education in dairying that can be got in this country?—No doubt that is so; we have made that our speciality.

1659. Not only in all forms of butter-making, but, I think, the teachers of the college make the best cheese in Europe?—I think so.

1660. With regard to the grant, we get an increased grant this year?—We have a grant up to £800 from the Board of Agriculture.

1661. But we still have a hope we may receive more in the future?—Yes, we live in hope.

Mr. J. F. BLACKSHAW, Principal of the Midland Agricultural and Dairy College, Kingston, Derby, called and examined.

Mr. J. F. Blackshaw.

1662. (*By the Chairman.*) Will you give the Committee some information about the amount of capital expended by the counties in establishing the college?—The amount of capital that has been expended by the counties in establishing the college is, in the case of Leicestershire, Nottingham and Derbyshire, £4,000 each, and of Lindsey division, £1,300. That was not all spent at the outset. To begin with, a contribution of £2,000 each came from the first three counties and £1,000 from Lindsey; the remainder of the capital has been spent from time to time as the increase in the work and the demand for extra accommodation necessitated it, totalling £4,000 each in the case of three counties and £1,300 in the case of Lindsey. That capital not only represents what has been spent in buildings, but also the equipment of those buildings as regards apparatus, and the stock on the farm, including the live stock.

1663. In addition to the capital you mention, there are favourable conditions under which the farm is leased which should be taken into account; that is, the farm attached to the college and the rent paid for the farm?—The farm is leased at 27s. per acre.

1664. And the house inhabited by the Principal, how was that built?—That was built by Lord Belper, the landlord, and the governing body are the tenants. I should have explained, in speaking of the capital, that we have a much larger establishment than the amount of capital expended might lead you to believe. In the first place, the governing body's object has at all times been utility as regards the buildings rather than outward show, and the result is you find very plain buildings, but once you are inside I think they are very well suited for the purpose for which they are intended. Also, the governing body obviated expenditure of capital by leasing the land and by having the most generous landlord, who has himself put up a considerable portion of the buildings and leased them to the governing body. That applies particularly to the remodelled farm buildings and to the Principal's house.

1665. What are the annual grants made to the college by the County Council?—The annual grants made to the college are made under two heads: first, to the in-college work; and, secondly, to the out-college. To the in-college work each of the four counties gives £100 towards the instruction in agriculture, and three counties, namely Notts, Derby and Leicester, make an annual grant of £400 a year

towards the in-college and dairy instruction. I should say, according to their agreement, they are to contribute £300 each; but it was found some two years ago that £300 per annum for the dairy was not sufficient, and consequently the counties agreed to increase for a time their annual contribution by £100, making it £400 per annum. Lindsey contributes £200 per annum to the dairying, being only a half partner in the dairy instruction. In agriculture Lindsey is a full partner, but in dairying she is only half partner. So we get £400 a year from Notts, Derby and Leicester, and £200 from Lincolnshire. As regards out-college work, each of the counties is supposed to contribute at least £100 per annum towards lectures and experiments. The amount they actually contribute varies with the different counties. Nottingham has been in the habit of granting £300 per annum for lectures and experiments, exclusive of travelling dairy school work. Derbyshire, as a rule, has given £450 or £500; Leicestershire from £100 to £200; Lindsey varying considerably, from £200 to £400. I have the actual amounts granted in the different years if you would like to have them.

1666. Dairy instruction is always given at the central institution?—We have a travelling dairy in addition to the instruction at the fixed school. The two counties of Notts and Derby employ a travelling school during the summer months, from April to October, for butter-making and soft cheese-making only. The cost of that is additional to the figures I have mentioned.

1667. And that instruction is given by the teachers of the college?—That is given under the direction of the college.

1668. Are there any local committees in the counties in order to increase the knowledge of the institution?—Well, although there are not any actual local committees officially appointed, I should say in that connection I take every opportunity I possibly can get of consulting the Chambers of Agriculture or the County Agricultural Societies so as to get them interested in the work we are doing; but there is no actual committee which exists for that purpose.

1669. (*By Lord Belper.*) The agricultural societies are in touch with the college?—Yes, but at the present time we have not actually done any work through them, beyond informally laying the work before them.

1670. (*By the Chairman.*) What privileges do the

counties receive in return for the grants made?—The grants they make must not be looked upon as maintenance grants. They are in reality a guarantee of fees, in that we have to work for them. We may be called upon to return work to the extent of the whole of the grant made. For the in-college agricultural grant each county is entitled to 150 weeks' free instruction, which they give out in the form of scholarships. For the dairying, the full partners, that is Notts, Derby and Leicester, are entitled to 184 weeks' free instruction, which is equivalent to four scholarship students in each six weeks' course that is held during the year. 184 weeks is their full privilege. And in addition to the privileges under the two grants, residents in the contributing counties coming without a scholarship come at half rate. For instance, if they were coming for dairying, the charge for instruction would be 10s. a week as against £1 a week charged to anyone coming from outside those counties. That privilege is unlimited as regards numbers. Beyond that, residents in the county have the option of seeking the advice free of charge and any other information which can be obtained from the college; that is all in recognition of the grant. Out-college grants are recoverable as follows: they may be taken in either lectures or field trials, what we commonly term experiments, the lectures being charged at a fixed rate, whether agricultural, horticultural or veterinary lectures. Field trials are charged in the same way. They are all done at fixed rates, and so long as the county does not exceed the value of the grant there is no charge made; but if the value of the work done exceeds the grant made, then the county is assessed for the balance.

1671. I suppose full advantage is taken of those privileges by the counties?—Full advantage has been taken of them, particularly during the past and present year. At first full advantage was not taken of the privileges by any means, but year by year it has been creeping up, both as regards the in-college privileges and the out-college work, until now they take the fullest privileges it is possible to get, and the result of that is the finances of the college are getting more crippled every year, because whereas at first when they did not take full advantage the remainder of the grant was left in our hands and we annexed it, but now they take up the full value of the grant and the result is we have not that surplus.

1672. Are the lectures well attended?—They are. On average, I think, works out between 30 and 40 per centure. But what is still more satisfactory is that the numbers are made up of men who are really interested in the lectures, who really come to learn and not to criticise in the manner that was the case in the early years.

1673. The lectures are attended by farmers?—Yes, and men who come with the intention of gleanings information if it is possible to do so.

1674. The lectures are not attended by labourers?—In some cases they are, especially allotment holders.

1675. But the main attendance is farmers?—Yes.

1676. Perhaps you will give the Committee some account of the courses of instruction which the college provides?—Well, first of all, there is the agricultural course, which up to last year consisted of three terms of 10 weeks each, each term being progressive on the previous one. A student might attend the first term, and if it was not convenient to come to the second that year he could postpone coming until the following year. Last year the governing body decided to establish a two years' course, that decision was come to in consequence of several applications for a longer course in agriculture. The applications were from residents in our own counties who would not go elsewhere, so a two years' course has now been laid down. In dairying we have three courses. We have what is called the diploma course, which is of 36 weeks' duration, and is intended for those who wish to gain a fairly clear insight into not only the theory, but the practice of dairying. The students come to the college in October and take practical dairy work every morning during the course, and the afternoon from 12.30 is occupied in attending lectures and laboratory work, special attention being given to dairy chemistry and dairy bacteriology. Then we have the factory managers' course in dairying, a course intended to equip young men with a knowledge of the management of a dairy factory. That course was put on in consequence of numerous applications for such men, coming more especially from co-operative dairies—where farmers have co-operated and established a dairy in a certain district to suit those farming within the range of that centre, and they want a competent manager—I say that that course was put on to provide managers, thoroughly equipped both as regards theory and practice. Then there

is the six weeks' dairy course, that is the course intended for farmers' sons and daughters who cannot be spared for a long period, and we have large numbers attending those short six weeks' courses. Of course they are mainly for instruction in practical dairy work. They may take either butter or cheese making, or both. We do not encourage them to take too many things. They can choose the class of cheese for themselves according to what they wish to do at home. And in the afternoons they have courses of instruction in horticulture, book-keeping, veterinary science so far as it affects dairy stock, and poultry keeping. Then we have special courses in dairying which deal really more especially with dairy bacteriology. We have teachers and others coming to us to rub up their knowledge in the various branches, according to what they are specially interested in, but as a rule, it is for special instruction in dairy bacteriology, of which the college makes a speciality. The only other course I need mention is the nature-study course for rural school teachers. We have had for several years in the summer months three courses of a fortnight each during the months of July and August, and they are attended by the masters and mistresses of the rural elementary schools, the first course being for males, the second for females, and the third for males. During those courses instruction is given in nature-study generally, but I always make it a special point to inform them as to the objects of the college, what is being done as regards agricultural education, how it is done, and what the results have been. I do that because I am very desirous that they should have that knowledge, so that on going home to the parish they represent, they can give the information to the farmers in their district, and I have known very great benefits accrue from that. These schoolmasters become very interested in what they are doing. They go back most enthusiastic, and explain to the farmers in the district what is being done, and as a result of that many students have come to the college, who otherwise would not have known about it. Those are the chief courses we have at the college.

1677. Are there different courses in agriculture?—There is a one-year course and a two-year course.

1678. What is your staff?—Besides myself there are two lecturers on agriculture, one whose work is confined to in-college work, and the other is mostly engaged in out-college work. Then in dairying there are two instructors for practical dairy work. In chemistry and bacteriology there is Mr. Golding and his assistant. Agricultural botany is taken by the out-college agricultural lecturer. Agricultural entomology is taken by the lecturer on agriculture. Then we have a veterinary surgeon to take the veterinary science. We have an instructor in poultry-keeping who manages the practical poultry department and gives such lectures as the college requires. Then there are the lectures in horticulture. We had two instructors until quite recently, but one died a few months ago. His position has not been refilled at present, so for the moment we have only one; but as a rule there are two for the most part confined to county work. We have fruit and vegetable plots in Derbyshire, and the instructors go round and give advice to whoever requires it. Then in nature-study we have Mr. Thornley, assisted by other members of the staff. Then we have an instructor in bee-keeping, another in land surveying and mensuration; a man for iron-work and a man for wood-work. Then we have a farm steward who manages the practical farm students. Those are the members of the staff.

1679. Is there any instruction in book-keeping?—Yes, that is given by the lecturer on agriculture. The branches covered are agriculture, dairying, chemistry and bacteriology, agricultural botany, agricultural entomology, veterinary science, book-keeping, poultry managing, horticulture, nature study, apiculture, surveying and mensuration, iron and wood workshops, engineering, and practical farm work.

1680. What further extension do you think is most needed?—Most of the departments I have mentioned need extension. For instance, in the chemistry and bacteriology, we require additional accommodation. Our space is exceedingly crowded at the present moment, and that might apply more particularly to the laboratories. The space there is becoming insufficient for the number of students applying for instruction, and unless we are to cut off the numbers, extension will have to be made in that department, both as regards accommodation and assistance in order to give instruction. Then in poultry management, I quite think it is possible we shall require another instructor, because we are getting

Mr. J. F.
Blackshaw.
7 May, 1907.

Mr. J. F.
Blackshaw.

7 May, 1907.

1680b

more than we can do, both as regards in-college and out-college work. Then we have a greater number of practical students on the farm than we have had in the past, and it is probable that we may require another assistant instructor, to supervise the practical work. As regards the increase in staff, those are the main points where I see a possibility of further assistance being required, beyond further assistance to myself in that the number of applicants for advice is getting greater every day, so that some help may be needed in the advisory branch.

1681. Is any research work carried on at the college ?—Yes, both on the agricultural side and the dairy side. On the agricultural side the research is mainly confined to what I might call the bacteriological side. A great deal has been done by our instructor in bacteriology, Mr. Golding, in the investigation of the assimilation of nitrogen by leguminous plants. That work he has been engaged upon for several years, and it now occupies a considerable portion of his time. With regard to dairying we have done a considerable amount of research work in the making of butter and cheese, but still more requires to be done. In fact, I consider that side one of the most fruitful branches, and I strongly hope that we in the near future may be enabled both as regards staff and funds to do more. I feel confident there is a great deal of work that requires doing, and work which would have an immediate practical application and pecuniary benefit, and that applies particularly to the cheese-making.

1682. Are your students examined at the end of the course ?—The agricultural students are only examined by their instructors. The dairy diploma students are examined by external examiners. There are three examiners appointed, one to take the practical dairy work, one to take theoretical agriculture and dairying, and one to take dairy chemistry, both theory and practice, and dairy bacteriology, both theory and practice. That examination is made as searching as it can possibly be made. And the same applies to the factory managers. The dairy diploma students and the factory managers have external examiners, but agriculture does not, and the short course students do not have an examination at all.

1683. Do they get a certificate ?—Yes, they get a certificate on the work of the course.

1684. I suppose the teachers are present when the examinations are conducted by external examiners ?—The teachers are present in the oral examinations.

1685. But do not take any part ?—No.

1686. And do the external examiners consult the teachers as to the curriculum before they put the questions ?—In nearly all cases, especially would that apply in the case of chemistry and dairy bacteriology. It has been a special rule that an examiner shall consult with the instructor before starting his examination.

1687. Is the present accommodation sufficient to meet the demands made upon it ?—No, my lord, it is not. At the present time I have students booked forward as far as next October, even in some of the short courses. All through the past session we have been particularly full, more so than ever before. In previous years we have extended from time to time in order to meet the increased demand, but as fast as we extend we seem to fill up and require further extension. During the past winter we had all the accommodation filled, and we had 13 or 14 students lodging outside the college.

1688. Is accommodation easily found outside ?—Not easily. Fourteen is as many as we can possibly find accommodation for, and then it means some of them walking two miles.

1689a

1689. Can you give the Committee some account of the way the field trials are carried out ?—As regards the actual scheme of the trials they are made exceedingly simple to begin with, the idea being to build upon them in the following years. We provide simple object lessons to begin with and they get more and more advanced as the years go on. Those field trials are situated at centres distributed over the counties, and we do not fix them at any centre unless we have very good evidence they are likely to be appreciated and there is a genuine desire to have them. When the experiment is about at its best we hold what we call a demonstration. A member of the staff goes there, having previously notified the farmers in the district that he will be there, and we get a good number of farmers to attend, and we then explain the object of the trial and they see the result for themselves. We find that gives them a certain amount of interest in these trials, and we are careful to inform them that in the winter time we shall come and give them the result of the trials, not only as carried out there, but the result of the

trials as carried out in other centres, perhaps on different soils. We find their interest having been aroused we get a good attendance at the lectures, and an attendance of men who are interested, and we give them at the same time a great deal of information concerning the general principles of manuring, and we often have applications for lectures concerning other matters. That is, broadly, the system on which we work. I, myself, attach great importance to this branch of the work. I believe it is by far the most important branch, as regards agriculture, that we are undertaking. In the early days of the college most of the out-college work was concerned with giving courses of lectures to farmers. Well, we found that that had not a very good effect. They perhaps came and listened to those lectures, but whether it made any difference to their practice is very doubtful. As the result of further experience we had very good evidence that provided we could only demonstrate what we were actually talking about, our words had a much greater effect. It was a far quicker means of gaining the farmers' confidence, and that is why we have during the past few years increased this demonstration work and reduced the number of lectures.

1689b

1690. And the lectures have been upon that field work ?—Yes.

1691. And you find that is popular with farmers ?—Undoubtedly so. There is no doubt the farmer prefers demonstration to verbal instruction.

1692. And that leads the farmer to consult with the heads of the college ?—Yes, I have had striking illustrations of that. Only a week ago I happened to be at a public meeting of farmers in the neighbourhood where we had had several field trials, and after the meeting I was consulted by a large number of farmers as to the best means of manuring their crops, especially as regards the mangels and swedes. That I attribute entirely to the confidence we have gained in consequence of carrying out the field trials in their neighbourhood.

1693. Can you state that the work done in the college is thoroughly appreciated ?—Wherever it is known I can say it is thoroughly appreciated. Where there is no appreciation it is in consequence of their not knowing.

1694. Where they are brought into contact with it they fully appreciate its value from a practical point of view ?—Yes.

(THE LORD BARNARD then took the Chair.)

1695. (By Lord Belper.) In carrying on a college like Kingston you necessarily have to produce or purchase a great quantity of milk ?—Yes, we purchase on an average about 500 gallons a day.

1696. In addition to what you produce on the farm ?—Yes.

1697. And, naturally, in carrying on a college in which that large quantity of milk has to be used, there is considerable expense attached to the dairying part ?—I consider dairying is by far the most expensive branch of agricultural education. You are dealing with a very expensive and a very delicate article, and a very small mistake on the part of the student is sufficient to involve considerable loss, and those losses do and must occur where you have large numbers of students taking dairying as we have.

1698. Where the students all have to be taught the process of manufacturing cheese or butter there must be a considerable loss—however good the quality is there must be a considerable amount of loss ?—Very considerable, and that is why I say dairying education is the most expensive.

1699. You are able to speak of that from figures. The farming part of the operations and the dairying part are kept quite independently ?—Yes.

1700. So that you can tell what the loss is on the milk after it comes into the dairy to be turned into butter and cheese ?—Yes, it almost invariably shows a considerable loss.

1701. Well, under those circumstances you think that that is a reason why a dairy farm carried on on a large scale like that should receive encouragement in the shape of grants to a considerable extent from Government ?—Yes. I have often felt that the grants that have been given to dairying education have not been sufficient in consequence of the loss that is involved in dealing with a delicate substance like milk.

1702. Now at present I think you have shown there are a larger number of students than there have ever been,

and although you increased the accommodation a few years ago, yet you will still further have to increase the accommodation owing to the interest taken in the work of the college?—Entirely owing to its success.

1703. And I suppose I may also say that your staff during the past year has been working under very considerable pressure, owing to the large number of students and the great amount of work that has to be done?—Yes, I can say that most feelingly, that every member of the staff has been working at very high pressure indeed, and something will have to be done to relieve that pressure. It has not been possible to recommend it in consequence of the financial side of the question. In looking at the number of the staff of the college, I would ask the Committee to bear in mind that the members of the staff have all worked exceedingly hard and that the work appears to get heavier year after year.

1704. The high pressure the staff has been working at must have been brought to the notice of the governing body, and I may ask you whether you would agree that the governing body would be perfectly justified in increasing the staff if they had the means to do it?—Certainly, perfectly justified.

1705. In addition to that, I think at the present moment there is going to be some further accommodation built for the staff in the shape of lodgings?—That is so; there are two houses being built for members of the staff. The governing body at all times, I believe, is anxious to retain its best officers, and in view of that they are erecting two houses, so that they may have apartments of their own instead of being resident actually in the college. I might have pointed out that although the payments to the staff have remained fairly stationary, I think it must be allowed, if the whole of the staff is looked through now as compared with what it was in the early days, you will find considerable improvement in the standing of the men has been effected. I say that, speaking of the staff as a whole; and while that improvement has been effected, the total annual cost has not been increased, mainly in consequence of the lack of funds to do it.

1706. You spoke of the research work that was being done, and I think the value of that work has been recognised for two or three years now?—For three years the Royal Society have supported the work.

1707. You were not the Principal when the college was first started?—No.

1708. You have spoken to the fact that it is found highly desirable now to decrease the number of ordinary lectures and to associate those lectures with the work done in field classes?—Yes; and in connection with that I should like to say we are doing a very considerably increased work in the counties for even less money than was contributed in the early part of the time. I will quote the following figures: In the year 1900-1 there was contributed to the college from the counties a sum of £2,337 19s. 8d. for out-college work. For that sum 18 field trials were conducted and 471 lectures given. That is, of course, apart from the general advice.

1709. That is irrespective of the work on the farm?—Yes. In 1906-7 the amount contributed under the same head was £1,088 19s. 7d., and for that field trials were conducted at 67 different centres and 168 lectures were given. Now I think those who know what field trials are will realise that 67 field trials and 168 lectures represent more value as regards work than 18 field trials and 471 lectures. That has only been done by economising in every possible way, and that economising has been done in consequence of the increased number of applications coming for the field trials from the farmers themselves, and the desire on the part of the college to in all cases favourably reply to the requests for field trials.

1709½ With your permission, I would like to quote, in support of what I said about the appreciation of the farmers in respect of this work, a letter which I received from a farmer applying for field trials. The letter came from a farmer residing in a district where we had actually had a trial in the preceding year. It reads as follows:—

“Dear Sir,

On behalf of the farmers in this district I beg to apply to you to let us have a trial ground in . . . next season. As you are aware the last one was most successful and gave unbounded satisfaction to the farmers interested. I can assure you that if you can see your way clear to have one here next season the experiments will be watched with even greater interest than the last.”

Then I might quote a resolution which was passed by the

Nottingham Agricultural Society, some of the members of which came over the college last year. I might say farmers are in the habit of coming in large bodies over the college at certain times of the year. After their visit the Nottingham Society passed the following resolution:—“The members of the Notts Agricultural Society visited Kingston College on July 10th, 1906, and desire to record their appreciation of the work carried out by the Midland Agricultural and Dairy College both at the college and at the various centres in the county, and respectfully ask the Education Committee to continue in full the financial support given to the college, and, if possible, to increase it. They believe the work to be of great value to the farmer.”

1710. Speaking generally, you would say that the increase in the work and the increased interest taken by the farmers would justify the governors in spending a very much larger sum than they do now on the college if they could lay their hands conveniently on the money required?—It would most certainly be justified. I think it is absolutely necessary that money should be spent. We have continued to progress for a number of years, and the main part of that progress has been effected by exercising the strictest economy so that the increased work might be carried out for the same annual grants. At the present moment we have gone about as far as we can in that way, and we must look for additional grants if we are to continue our progress. If we stop our progress by curbing numbers, we shall go back instead of going forward.

1711. Are you aware that the financial side of the question is looked into pretty acutely in the matter of the college, and we cannot see our way to make the money go further than it does at the present moment?—Yes, it is looked into very carefully because the governors are continually trying to do more with it. For years we have done more and more, but my opinion is, knowing, as I do, the finances pretty thoroughly, that it is impossible to go further without getting increased support.

1712. Is there any other point?—No, except that I should like to draw attention to the fact that in consequence of the counties taking increased advantage of their privileges—that is to say, filling up every scholarship they are entitled to fill—we are not able to admit so many outside students as was formerly the case, because preference has to be given in all cases to our own county students. The result of that is that we do not obtain payment of fees to such an extent as we did in years gone by. That is another reason why we shall need increased support in future years; that is, if the counties continue to send in students in the manner they have been doing during the last year or two.

1713. (By Lord Moreton.) Do any of your students enter for the dairy examination and diploma?—Yes, they do, but never to any great extent until last year. Last year we had 13 students entered for that examination out of a total, I believe, of 32 who went in for the examination. Of the whole of the candidates for the examination 19 passed, of whom 12 were ours, so that we passed 12 out of 13.

1714. So that I need hardly ask if you were satisfied with the way in which the examination was conducted?—I have not been satisfied in the past, but I was satisfied last year.

1715. (By Dr. Somerville.) Is the reason for this large increase in the number of candidates drawn from your institution due to the fact that the examination was conducted at a more convenient centre?—That was the reason for our sending in an increased number.

1716. Because they conducted the examination nearer?—It was conducted actually at the college. That is the reason we sent up more.

1717. Previously it was conducted at Reading?—Yes.

1718. With regard to these field trials which you say are so much in demand, you do not find, apparently, in your part of the country that this form of instruction is regarded as of a pioneer character rather than of a permanent character?—I regard it more as actual demonstration work rather than research work.

1719. My point is this: you know that during the technical education movement the agricultural colleges went in largely for these demonstration plots or field trials in some parts of the country. They are not now so much in demand, you don't find that in your district?—No, on the contrary. The more we do the more they are wanted.

1720. You always follow them up in any particular centre with one or more lectures?—If the local encouragement justifies it.

Mr. J. F.
Blackshaw.

7 May, 1907.

Mr. J. F.
Blackshaw.
7 May, 1907.

1721. You consider that a systematic representation of the results through a lecture is desirable as a finish up?—Very desirable. I consider the work of that trial is not finished until the lecture has been actually given, and I should mention that a report of that trial is drafted in a short form and taken to that lecture, and a copy given out to each member of the audience, and it is gone through with them, so that they are given a direct interest in the report.

1722. May I ask whether all the members of this very extensive staff are entirely engaged in the work of the college?—Not everyone that is mentioned there.

1723. For instance, the instructors in wood and iron?—Yes, the wood and iron instructors are entirely employed, but they are not entirely employed in giving instruction. The wood man is a practical carpenter who, during the rest of the time, is occupied in the college in various ways, and the same applies to the practical iron work man.

1724. Similarly with regard to the engineer, you have an instructor of engineering and an engineer?—The engineer is entirely employed in the college. The other is a lecturer on the subject, and he is not entirely employed, but simply comes to give the lectures.

1725. (*By Mr. Latham.*) Will you give us a short epitome of how you conduct the butter and cheese schools, travelling or stationary?—You mean the short courses? Take the six weeks' course of the college itself, the fixed centre. The majority of the students come from the four counties as scholarship students. The student comes in and registers, and he or she is asked what branch of dairying they specially wish to take up; is it butter-making, or pressed cheese-making, or is it some branch of soft cheese-making or Stilton. If they say they would like to take Stilton, they are advised to take a month of their six weeks in the Stilton-room, attending every morning. The same with the other cheeses, according to the difficulty to be experienced in acquiring the art of manufacture. Each morning the students have to be in the dairy by 7 o'clock, and they actually have to make the cheese or butter, as the case may be. They are kept in the dairy up to 12.30 or 1 o'clock. In the afternoon they have a lecture. Monday, for example, they would have two hours' book-keeping; Tuesday, a lecture on the theory of dairying; Wednesday, horticulture, which includes not only the lecture, but taking them out among the fruit crops and showing them the management of trees. On Thursday they have veterinary science so far as it affects dairy stock; Friday, poultry-keeping. That is for the six weeks' course. Those courses are repeated throughout the year.

1726. For that work there is no examination?—No. There is an attendance certificate which is granted only to those who have performed satisfactory work, and who satisfy the instructors that they are diligent and have done their duty to the course.

1727. You do not even go so far as to ask them to write any report on the work they have done?—No, we do not.

1728. And they have little or no record to assist them in years to come?—They are compelled to make notes of their practical work in the dairy, and those notes are supervised by the instructor and, if necessary, are corrected.

1729. Don't you think it would be a very good thing if they did make records they could carry away with them?—They are bound to make them, and they are looked upon as exceedingly useful. Our instructions are: "never trust to memory anything that can be put down in black and white."

1730. Now with regard to the travelling school?—The travelling dairy school visits ten days at one centre, and can take up to 12 students in one class. If there are more than 12 they have two classes. At the end of the course, as a rule, there is a small competition, and scholarships are awarded to those who do best, to enable them to come to the college for further instruction.

1731. Do you have any cheese schools away from the college?—Not hard cheese.

1732. Can you tell us what are the sort of students you have principally?—I have gone carefully through them, and I find from 85 per cent. to 90 per cent. of our students are the sons and daughters of farmers—young people who mean to make agriculture their profession. So far as that is concerned, I feel we have got very close to that class of student it was hoped to get when the college was established.

1733. And do they continue to follow on the work afterwards?—So far as one can judge. We endeavour to keep in touch with all our students by sending them reports,

and we hear from them frequently, and they often come back and consult us on some points on which they wish for further information.

1734. How do the prices of your produce compare with the prices of the district?—The prices as a rule are above the district, except for anything that has been spoilt.

1735. Speaking of the field trials, do you do anything in research where possibly fields may be unsuited?—Not as regards dairying. Occasionally we visit farms to find the source of some peculiar flavour in the dairy produce, and with several farms we have made some very interesting bacteriological examinations; and in every case we have been able to overcome the difficulty.

1736. Do you find any difficulty with the veterinary surgeon? Is there any feeling that he should not give certain education?—I believe there was before my time, but in my experience there has never been any difficulty.

1737. How far may his education go?—So far as county work is concerned as far as concerns first-aid treatment of stock. In college work he goes further.

1738. Have you taken up shoeing?—Yes, but not practical classes in shoeing, not beyond the students in the college.

1739. (*By Prof. Middleton.*) The longest course which you give is the 10 weeks' course for agricultural students?—But now we have a two years' course. That is not in the old prospectus, but it is in the new one. That 10 weeks' course is a part of a year's course. The course is so arranged that it occupies three ten weeks. It is progressive.

1740. I see the numbers drop off slightly; there were 22 in the first, 20 in the second, and 18 in the third?—Yes.

1741. I suppose the inferior students drop out?—Yes, and occasionally a student's father is taken ill and he has to go home.

1742. Then in the course for dairy students is six weeks the longest separate course that you have?—No, the courses as laid down in the prospectus are: Dairy Diploma Course, 36 weeks; Factory Managers' Course, 36 weeks; and the Six Weeks' course; but apart from these courses we do get other students for from three to six months.

1743. Then do any of the students come for less than six weeks?—A few come for less than six weeks, not very many. Less now than was the case formerly, because we have been so full we could not admit one or two-day students.

1744. Your normal course is six weeks for the dairy students and 30 weeks or 60 weeks for agriculture?—Yes.

1745. In addition to the 30 weeks, have you any complete course of 10 weeks?—If a student wants a short course, he takes the first 10 weeks of the 30 weeks' course.

1746. Then this number, 425, that you gave us for 1907, does not represent individual students?—Oh, no.

1747. It represents in the case of agricultural students that number divided by three?—Yes.

1748. You say not many take the two six weeks?—No, not very many as a rule, it is either the six weeks or 36 weeks.

1749. You make a point of this: that education in dairying is expensive because of the students making mistakes and injuring produce, I suppose?—Yes, there is a great deal of that. Perhaps not quite so much as one might expect, but still there is a great deal of loss involved.

1750. (*By Mr. Medd.*) Can you tell me whether each of the counties working in connection with you has an agricultural committee?—No. Leicester have an agricultural committee; Nottinghamshire is done through the Higher Education Sub-Committee; Lindsey is done through the Education Committee, I believe; and Derbyshire is done through the Educational Committee. Leicestershire is the only one that has a special sub-committee.

1751. Now do these counties consult you annually as to the agricultural education to be given in their areas every year?—So far as the out-county work is concerned, yes. I am requested at the commencement of each year to draw up a scheme, and suggest the number of field trials that shall be conducted, and the probable cost to the county.

1752. And do you have the lecture scheme drawn up each year in advance?—Not the lecture scheme. I mention the cost that will be involved by giving lectures on the actual field trials, but the balance of their grant is left to their discretion as to whether it is spent on horticulture or poultry-keeping, etc.

*Mr. J. F.
Blackshaw.*
7 May, 1907.

1753. Well, apart from the field trials and your institution, there is no permanent institution for intermediate agricultural education within those four counties?—No.

1754. Is there nothing done of a practical and definite character for either farm lads or the sons of small farmers?—No; nothing done at the present time.

1755. Now would your institution be prepared to act as the central body to work in co-operation with those four counties, assisting them to devise schemes to cover the whole agricultural education of each area?—I should think it would be perfectly willing.

1756. Well, in regard to the cost of your institution, the expenditure last year was £10,396, now what proportion of that goes to the dairying, and what proportion to agriculture?—That I am afraid I cannot answer.

1757. Perhaps you could send that on afterwards. I would like to know the specific application of fixed sums to either one or the other.

1758. (*By Lord Belper.*) Wouldn't the farm refer to both?—So far as the grants made to the dairying department for 1905-6 they were £1400, and to agriculture it was £1423 1s. 1d., so that they are practically equal. That is quite apart from the grants from the Board of Agriculture.

1759. (*By Mr. Medd.*) What I want to find out is approximately your expenditure upon dairying work, and your expenditure upon agricultural work. But of course the greater part of your expenditure is upon the staff, and you cannot easily define that?—No.

1760. I see that the Lindsey Division of Lincolnshire allocated £974 of its "whiskey money" to you, mainly for lectures in the county on general agriculture. That is so, is it?—Yes, and field trials.

1761. It says "for lectures mainly," and then I refer to the Report of your external work in Lincolnshire, and you only give 46 lectures in that county?—Yes, and a large number of field trials. The whole of the money mentioned was not devoted to lectures.

1762. I think it ought to be qualified or explained in some way because it is most misleading. The Report says this very large sum was mainly for lectures, and you only gave 46. Since the institution is in want of money, I was wondering whether you could not make a more economical use of the money you have. It seems a most expensive way of using it?—So far as the money goes, it could not be used more economically than it is at the present time. A large number of field trials are conducted on the most economical plan possible. Last year we had considerable inquiry into the question of sugar beet growing.

1763. In regard to these lectures again, what are the expenses incidental to them. Of course the lecturer is a member of your staff, and is paid as a member of your staff?—It is a question of proportioning his time, and the governing body fix the rate per lecture.

1764. Now in regard to your scholarship boys, do the scholarships cover the cost of maintenance?—The County Councils grant maintenance according as the parent is or is not in a position to pay.

1765. How do they ascertain?—By enquiring of the local County Councillor.

1766. Have you ever heard any objection to that inquiry?—No; but I have often expected it.

1767. Now, is there any entrance examination for students coming to your college?—Not at the present time.

1768. Now I see that Mr. Thornley is a member of your staff, can you tell the Committee whether there has been any appreciable result from his lectures in Nottinghamshire and Leicestershire with the elementary school teachers?—As regards the nature study work by Mr. Thornley, it has undoubtedly been most successful, in a great measure due to Mr. Thornley's abilities in that direction, more especially because he possesses the knack of interesting his students, and you will find that all his students become most enthusiastic students of nature, and in going about I frequently find these schoolmasters or schoolmistresses out in the country lanes studying nature, and the children apparently becoming as enthusiastic as their master or mistress.

1769. Then you would recommend the employment in other areas of someone similar to Mr. Thornley?—Yes, if they can get his duplicate.

1770. Your course at the college is only a short fortnight?—Yes.

1771. Could you extend it to Saturdays throughout the year?—I am afraid not without interfering with the agricultural or dairy work.

1772. You would imagine it preferable to the short course if you could get it?—Yes.

1773. At either Chesterfield or Derby they have it?—Yes, they have done much good.

1774. Do you notice an appreciable improvement in the general rural education?—We have hardly had time, but so far as I can see I have certainly been struck with the greater interest taken in their surroundings by the children, more so than was the case a few years ago.

1775. (*By Mr. Davies.*) With regard to the examinations I understood you to say so far as the dairy classes were concerned there were no examinations at the end of the course; but with regard to the two years' courses in agriculture, are there any examinations?—Yes, the examinations in agriculture are conducted by the lecturers. The long-course dairy students are examined by external examiners.

1776. I understand that your students are roughly divided into two classes, those that come from the counties affiliated to the college and those who come from outside who pay double fees?—Yes.

1777. Then I think you have also told the Committee that the number of students coming in from the counties have increased so rapidly during the last two years that you are now unable to take in as many students from outside and, therefore, your funds have gone down?—That is so.

1778. Is not that a reason why you should ask the Councils who send their students for nothing to increase their grants to the college?—Well, I should do that if I thought there was much prospect, but owing to the need for money arising out of the 1902 Act, there is more demand on the funds, and it is much more difficult to get money out of County Councils now than it used to be; and I do not wish to go to the Councils and ask for more money unless I can see a reasonable prospect of getting it.

1779. But still, as a matter of business, the contract you have to enter into of supplying them with so many student-ships, it is a fact that many more coming in has encroached upon your resources?—Quite so.

1780. And they really ought to contribute more?—I wish they could. They say they quite realise that but cannot do it. What some have done is this, they have granted scholarships in excess of the privilege and have paid the difference, but the difference only at county rates, that is half what we charge outside students.

1781. Your college is residential, is it not?—Yes.

1782. What fees do you charge to outside students?—For instruction in dairying £1, and boarding fees 15s. male and 12s. female. The composition fee for the longer course (36 weeks) is £27.

1783. Are these field trials paid for out of the county grant?—Each county makes a grant at the beginning of the year of so much, Nottinghamshire £300, Leicestershire less; then that money is spent either in field trials or lectures, each trial being reckoned at a fixed rate of which they are forewarned by my scheme issued at the beginning of the year.

1784. Then with regard to the remuneration of the staff, I understood you to say that the staff has been underpaid during the last few years, that their work had increased very much and they had had no extra remuneration?—That is so.

1785. Suppose the Government proposed to give a further grant would you recommend that the stipends of the teachers should be increased or new departments created?—Well, in some cases the stipends will have to be increased, undoubtedly. That must be done. With regard to new departments, there are new departments we would like to add when the funds admit.

1786. Those are the most important things?—Yes—increased staff—and increase in certain of the courses.

1787. You said that in response to some applications from co-operative dairies that you established a special class for factory managers, have any co-operative dairies made grants towards the college or given scholarships?—No.

1788. None whatever?—No.

1789. Have you applied to them?—No.

1790. How many applications have you had for factory

Mr. J. F.
Blackshaw.
7 May, 1907.

managers?—Well, I cannot say. I have always far more applications than I have suitable men to recommend. Up to the present all our men have been taken up immediately they have finished their course.

1791. Are those factories in your immediate neighbourhood?—Throughout England, and some abroad. Two men have recently gone to South Africa: but, generally speaking, they are in England or Wales.

1792. And the reason they apply to you is because they recognise that you are making a speciality of that?—I suppose so.

1793. (*By Lord Barnard.*) I should like to ask one or two questions. The governing body of this college consists of representatives of County Councils, are there any outside representatives on that body?—Only the Yorkshire representatives. Mr. Cope mentioned that we have had for some years a working arrangement with Yorkshire. If we have a student who wishes to take a degree in agriculture—we do not have many—we send him to Yorkshire. In the same way if Yorkshire have a student who wishes to specialise in dairying, they send him to us, and owing to that we have a representative on their Council and they have a representative on ours.

1794. How often does the governing body meet?—Quarterly.

1795. At the college?—At the college.

1796. Who is the clerk or secretary?—I am.

1797. Do they practically control the college or is it left largely in your hands?—They have the control; I carry out their instructions.

1798. Do you report to them verbally or in writing?—I report in writing every quarter.

1799. Do you know whether the reports as to the college come before each administrative County Council?—The annual report does. I do not know about the quarterly reports.

1800. Do you keep the actual accounts yourself?—Yes; they are under my supervision.

1801. (*By Lord Belper.*) They are audited?—There is a financial committee that meets every month and the accounts are audited at the end of every year.

1802. (*By Lord Barnard.*) Are you satisfied with the system of control?—Yes, my lord.

1803. Government exercises a certain amount of control too, I suppose? They send an inspector down?—The Board of Agriculture, yes. An inspector comes about twice a year.

1804. Does he ever make any suggestions?—Yes, from time to time.

1805. Should you have any objection to the extension of Government control?—That is rather difficult to answer. If it is in the direction of what has gone on in the past, I should have no objection.

1806. You must recognise, I presume, that increased aid from the Government involves increased Government control?—So long as it is as agreeable as it has been in the past I should have no objection.

1807. You are satisfied with the control of the Board of Agriculture, and do not hanker for the Board of Education?—I do not wish for anything different.

1808. You referred to the sums which were necessary for supporting the institution, and you included in those sums stocking the farm; do you have separate farm accounts?—Yes.

1809. And I suppose you use them for the students?—Yes. But so far as profit and loss on the farm is concerned, we cannot.

1810. You keep an ordinary live stock account, and do you value the live stock at the end of every year?—Yes.

1811. You also referred to buildings; were you using the term in the ordinary sense, or in the technical sense?—The whole of the buildings on the ground.

1812. As to the outside students, do the fees which you charge them cover the cost of their education?—That somewhat depends on the course taken. On some courses, yes; on other courses, no. I doubt very much whether the charge covers the special course in bacteriology. If a student comes and wishes to receive special instruction in a class of cheese we are making daily, then the fees will cover the cost; but if it is some cheese for which we have not a market, then the probability is it does not cover it.

1813. I see one student came from Turkey?—Yes, he was a son of a late Turkish Minister.

1814. He came to acquire a knowledge of practical farming?—Yes, he was at work on the farm with the other students.

1815. How long have you been at the college?—Since 1899.

1816. Might I ask where you were before?—For two years I was assistant to Professor Wright, at the West of Scotland Agricultural College. Previous to that I was at Bangor.

1817. Perhaps you can tell the Committee whether you have always been associated with farmers?—My people are farmers and I was brought up to the practice of agriculture.

1818. You told the Committee you considered your staff inadequate, do you think that is a peculiarity of your institution, or do you think that applies generally to all institutions?—Well, I naturally think it is a greater peculiarity of our own, but no doubt is true in many other cases.

1819. Would you agree at present that the amount of higher instruction is growing?—Most certainly. I think during the past two years there has been a greater development than during the whole of the years before.

1820. That would account for the movement amongst teachers. My experience is teachers are constantly leaving because they go and apply for better posts. Do you agree with me there?—Undoubtedly.

1821. Mr. Latham asked you as to your veterinary instructor, is he wholly employed in the institution?—No.

1822. Is he a veterinary surgeon in practice?—Yes, he has a practice. In the winter he is almost wholly employed in the college, and he has a very capable assistant at his place in Nottingham.

1823. How many of the staff reside on the premises?—Seven, I believe it is.

1824. Mr. Latham asked you about the dairy students, when they left whether you gave them a certificate?—Yes, of attendance.

1825. Is that certificate ever withheld?—Yes, most decidedly, that is one of the things we are very strict about.

1826. It is of some value?—I regard it as of value. I would not give it to anyone who had not done justice to the course.

1827. It is not given as a matter of course?—No.

1828. Is it laid down by your governing body or by any other authority, or by yourself, that you should lay yourselves out to educate the sons of farmers principally?—That is looked upon by myself and I believe by the governing body as the primary object of the college.

1829. And that is fulfilled by the fact that some 80 per cent. to 90 per cent. are the sons and daughters of farmers?—Yes.

1830. But you don't suggest that other persons who wish to take up either the actual practice of agriculture or else pursuits closely identified would be prevented?—No, I don't suggest that for a moment, provided those impractical students were willing to go to practical work on the farm for two years before taking theory. But if they wanted to come and take the theory before taking the practice then I should have no compunction about giving preference to a farmer's son.

1831. In your opinion are you satisfied that farmers in the district with which you are acquainted are daily becoming more and more alive to the value of the instruction which is provided in the college?—Absolutely certain of it, you can feel that in going amongst the farmers as I do, the change is almost from week to week. You feel the appreciation is greater.

1832. (*By Mr. Davies.*) With regard to the scholarships, you told Mr. Medd that the scholarships were awarded by particular County Councils; there was no examination, but each particular district County Councillor who was allocated for that district made enquiries into the applications and awarded the scholarships?—He recommends them.

1833. Would you recommend on principle that all the money should be pooled, and the scholarships should be allocated by the people in the college rather than by the County Councils?—I do not know that I should advise that. In one sense the money might be more usefully spent; in other ways I am afraid it would lead to friction. I think on the whole it is better as it is now.

FIFTH DAY.

Wednesday, 8th May, 1907.

PRESENT :

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman.*)

The Lord BARNARD.

The Lord BELPER.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOS. LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor W. SOMERVILLE, D.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. M. J. R. DUNSTAN, M.A., Principal of the South Eastern Agricultural College, Wye, recalled and further examined.

1834. (*By the Chairman.*) Is there in your opinion any line on which the development of the work of the Wye College might proceed?—I think, my lord, that in the direction of horticultural and fruit-growing work there is room for a good deal to be done by the college. Of course, we are situated in the middle of a fruit-growing and horticultural county, and undoubtedly some development is wanted on those lines, and also, as I mentioned in my evidence last week, on the lines of the purely research part of the work of the college. I think in those two directions there is opportunity for considerable development. We have started a certain amount of horticultural work, but it has only just been commenced really, and our resources at present are quite insufficient to enable us to cope with the amount of work required.

1835. You think that means are required for development in the direction you have mentioned?—Certainly.

1836. Have you any further opinion to offer as to the basis upon which grants should be allocated by the Board of Agriculture?—I have been considering the question as to the basis of grants being allocated according to the expenditure on salaries, and as to whether that could in any way be dealt with, and I think it certainly could be. The objection I had to the proposal in the first instance was that an increased grant according to increased salaries might possibly be used merely for augmenting salaries without consideration of the requirements of the individuals for increased remuneration. But I certainly think if that were safeguarded it might be a satisfactory basis on which to work. With regard to the other basis, as to the amount of contributions given by the counties—of course the attitude on the part of the Board of Agriculture always has been to help those who help themselves, although I do not think that has altogether worked out quite on the lines that were expected—I do not think the number of students should be made a basis, and I do not think the total expenditure of the college should be made a basis, but I certainly think the expenditure on salaries is an evidence of the efficiency and the extent of the work done, and that that might reasonably be a basis.

1837. The expenditure on an efficient staff?—The expenditure on an efficient staff.

1838. What are the most pressing needs of your college at the present time?—Increased accommodation for students. We are situated in a village where the accommodation for students is exceedingly poor, and the accommodation of the college is only for 54 resident students.

1839. That would be capital expenditure?—That would be capital expenditure, but it would be remunerative to a certain extent. At the present time we have more applications than we can deal with, and, of course, the accommodation in a small country village is exceedingly limited.

1840. Have you any short courses for the instruction of the small farmers in your neighbourhood?—We have none at present, but we should like to have some. With our present accommodation it is absolutely impossible unless we reject some of the students who come for the

long courses. We have no room for extra students, but I certainly think we might do something for the small farmers in the way of short courses, and I certainly think we might do something also in the way of technical instruction for the labourers. That instruction would be given by means of a labour master on the farm. My idea would be to have apprentices—young fellows from the villages, or anywhere, who would be apprentices and who would be taught their trade properly. I think that might be done.

1841. Do you think the farmers would be prepared to allow their sons to attend those courses?—I think we should really get the young fellows before they went on to a farm—young fellows of fifteen or sixteen—and take them and teach them some definite part of their work. The supply of labour is very very short now in Kent, and the need is very pressing.

1842. (*By Lord Moreton.*) Are all your students in-students, or are there any out-students?—There are 54 in-students, and the remainder are out-students. Some of them live in college rooms, and some on the farms, and about 50 of them live in the village.

1843. Which do you find most popular amongst students, to live in or out?—Their independence of course; but they are not allowed to live out until they have proved themselves to be reliable, and no student is allowed to live out until he has been one year at the college.

1844. I take it that your students are mostly young. What would the average age be?—The average age would be about eighteen.

1845. (*By Mr. Staveley-Hill.*) I see your courses of instruction contain a Bachelor of Science degree, and a diploma course and a certificate?—Yes.

1846. What proportion of your students go in for the first of those, the Bachelor of Science?—Five per cent.

1847. That is a four years' course?—That is a four years' course.

1848. What proportion of them simply come for the two years' course, the certificate course?—About 30 per cent. I should think for the two years' course.

1849. If you were to adopt the suggestion you made in answer to the Chairman to have instruction for labourers, could that be carried out at your college, or would you have to have travelling lecturers?—I should have the labourers on one of the college farms; it would be more the training of the labourers in the manual work—shepherding and stock managing, and so on.

1850. Do you think you could get the boys there before they really took employment on farms?—I am quite sure I could get apprentices there.

1851. (*By Dr. Somerville.*) I should just like to ask you, Prof. Dunstan, whether you support the view that has been placed before this Committee that young farmers are sufficiently attended to as far as their technical education is concerned, by the indirect influence that is brought to bear upon them through the improved agriculture

Mr. M. J.
R. Dunstan.

8 May, 1907.

Mr. M. J.
R. Dunstan.
—
8 May, 1907.

that they see in their own neighbourhoods, upon the farms there, by men who may have gone through a complete training such as your institution provides ?—I should say that would be quite insufficient.

1852. I suppose you would be of opinion that a small proportion of the bulk of the young farmers are now sufficiently provided for ?—A small proportion.

1853. How do you propose that the bulk of young farmers should be educated ?—Do you mean the bulk of the young large farmers, or the bulk of the young small farmers ?

1854. I do not really care whether they are small or large, but what are usually called the rank and file of the young farmers in the country ?—I think you can get at them in two ways : firstly, by short courses or longer courses at the colleges ; and secondly, by having district schools of instruction for those farmers.

1855. Is there such a district school, in point of fact, in either of the two counties which are associated with your college ?—None whatever.

1856. Are any such schools actually in existence in England with which you are familiar ?—We carried on two in Nottinghamshire some six or seven years ago. I think we had twenty week-day lessons or lectures for these young farmers.

1857. Are you acquainted with the school at West Lavington, known as the Dauntsey Agricultural School ?—No, I am not.

1858. They are boys up to about the age of 16 or 17, who are first of all given a good secondary education, and in the latter year or years of their school life they are given a technical education to the extent of being made familiar with the botany of the grass fields, with the principles and practice of surveying, and, I suppose, with the elements of agricultural chemistry. Do you think that such an institution as that might be duplicated with advantage throughout the country ?—I certainly think it might be. An attempt was made some years ago to utilise the existing grammar schools by means of giving instruction at those schools to reach the farmers' sons, but on taking a census of the two chief schools in Nottinghamshire, Mansfield and Newark, we found the proportion of the farmers' sons was so small that it was not worth while carrying on the instruction. But this Dauntsey School is essentially a school for farmers' sons and is a very different thing altogether, and I certainly think very good work might be done there.

1859. (*By Mr. Latham.*) You said just now that you thought you would like to have the labourers, that is the young boys of 16, as apprentices. Do you think their parents would agree to anything of that sort ?—It would depend upon what terms we could take them on. I expect the parents would want some small payment made to them.

1860. Allowed back to them for services that would be rendered by their sons ?—Yes.

1861. Would that not be very difficult indeed to work ?—There are difficulties with regard to it, but I think they could be overcome.

1862. What would you attempt to teach them when you had got them ?—I should attempt to teach them to be useful farm hands, and to work with more intelligence than some of our farm hands work at present.

1863. That means practical work ?—Yes, practical work, and a little agricultural science of sorts, and turn them out more efficient labourers than they are at present—sheep-shearing, milking, attending cattle and horses, and possibly a little hedging and work of that description might be added.

1864. How long would you think it would be desirable to keep them with you ?—I should be inclined to keep them for a time—to retain them as actual workers on the farm for a certain time, and then let them go.

1865. You do not think that you would so raise their position that they would be inclined to give up agricultural labour altogether afterwards ?—Certainly not.

1866. We heard yesterday that agriculture should not be attempted in secondary and country grammar schools. Is that your opinion ?—It all depends on the interpretation of agriculture. I think agricultural chemistry should not be attempted in country grammar schools.

1867. That agricultural sides should be added to the schools ?—No, I cannot say that I agree with that altogether. If agriculture is properly taught in agricultural schools, such as Dr. Somerville has mentioned, I think you might do a very large amount of useful work.

1868. It would be very much better for you if the

students had been prepared at such a school ?—We should get them very much better prepared to come on to us. I think it is a great mistake to teach agriculture in elementary schools.

1869. Are you speaking strictly of elementary schools ?—Strictly.

1870. Where those very boys of 16 that you want would come from ?—There is no time in the ordinary elementary school to introduce such a thing as agriculture, and if it is taught it must be taught in a very perfunctory way.

1871. We are doing as much as we can to teach these boys the growing of vegetables and so on in the school gardens attached to many of these elementary schools ?—Yes, but that is horticulture.

1872. Yes, but it leads on to agriculture ?—Quite so ; that I should agree with.

1873. It makes them fond of the land ?—Quite so ; I quite agree with that.

1874. I forget exactly your definition of the farmers' sons that you gave just now. Would you mind saying again what you consider the small farmer's son is ? There is a great difference between the large farmer's son and the small farmer's son ?—A great difference. As a rule the small farmer's son cannot be spared from home for the same length of time that the large farmer's son can be.

1875. What courses would you suggest for the small farmer's son ?—Short courses ; between haytime and harvest would be one course, so as to get them in the slack periods of the year.

1876. How long would you keep them at the college ?—For six or eight weeks at a time, and then let them go back, and take them again next year.

1877. Would it be possible for these young farmers to get scholarships ?—Yes. The system in Nottinghamshire is now that they have short courses and scholarships which are given by Nottinghamshire, Derbyshire, and several of the adjoining counties.

1878. You have none at present, I understand ?—No, we have no room for them at present, but we hope to have.

1879. (*By Prof. Middleton.*) You have had experience of these short courses in Nottinghamshire ?—Yes.

1880. From your experience do you think they are particularly adapted for the ordinary farmer's son ?—Particularly adapted.

1881. I understand the reason that you have not introduced them in connection with the college at Wye is because you have no accommodation ?—No accommodation.

1882. It is quite impossible to take them in ?—Quite impossible without accommodation. We have all the materials for teaching them, and the staff for teaching them, but we have no room.

1883. You have courses for elementary teachers ?—Yes.

1884. During the summer, at a time when farmers' sons could not attend ?—No, they could not come then.

1885. You spoke about teaching labourers on the college farms. You would not be able to take many on farms such as you have at present ?—No, we could only take from half a dozen to eight.

1886. You are thinking, then, of a very small experiment to be carried out by yourself ?—Quite so.

1887. Do you think it would be possible to have similar instruction at other centres in the county ?—I think where there is a college farm, certainly.

1888. That is to say you could send out instructors from your college farm to other districts ?—Yes.

1889. Do you find that the research work being done in your college assists the educational work ?—Immensely. A general atmosphere of investigation is of great advantage in a college, and senior students always take great interest in the research work that is being carried on. We find it is of immense advantage.

1890. (*By Mr. Medley.*) In regard to the agricultural sides to secondary schools, are you aware that all agricultural sides under such circumstances have failed hitherto, and that the majority of them have been abandoned ?—I understand the West Lavington school has been successful, but I have not investigated it.

1891. That is a different type of school altogether ; that is a school which you may say is essentially agricultural, the

secondary part being incidental, as it were. That school exists mainly for agricultural purposes. I am speaking rather of the agricultural side attached to ordinary secondary schools?—No, that has not been successful generally. At Brewood it is fairly successful, I believe.

1892. Have you many students outside the counties of Kent and Surrey?—About half our students come from outside Kent and Surrey, and we have ten students from London now.

1893. Does the London County Council make you any grant?—No, none whatever. Of course, a good many of those students reside within the London County Council area in Kent.

1894. Have you any scholarships for students outside Kent and Surrey?—None whatever, except that the Devonshire County Council have once allowed one of their scholarships to be held at Wye.

1895. Do you think it would be desirable to have one or two scholarships open to students from other parts of England?—Yes, I think from those counties that are not affiliated to any institution at present.

1896. To enable the sons of people who cannot afford your very high fees and who have no local institution available?—Quite so.

1897. Can you offer any suggestions as to the more specific allocation of the Board of Agriculture grants?—In our own case I take it that the greater part of the Board of Agriculture grant goes to keeping up the county work. A sum of £200 is allotted each year to the farm, and the balance goes to supplement the local contributions towards the lecturing and experimental and analytical work performed for the counties. I have taken out the figures very carefully on those points, and I find if we divide the Board of Agriculture grant into two parts and put £200 to the farm, the balance supplements the local contributions sufficiently to pay for all this external work.

1898. Would you suggest that in future it is very desirable that the Board of Agriculture should be able to meet by grants the money locally raised: that is to say, for every pound raised locally the Board of Agriculture should be empowered to make a grant of £1?—I should be very glad indeed to see it.

1899. That is a very desirable thing?—Most desirable.

1900. Do you think it desirable that the Board of Agriculture should carefully differentiate between different types and grades of schools in its report and in its allocation of grants, grading them as first grades or advanced, and second grade, or intermediate?—I think some such grading would be desirable, but it would be a little difficult to carry out.

1901. It would create jealousy doubtless?—Yes.

1902. But in the interest of agricultural education it would be desirable that parents and the country at large should know definitely the type and grade of each particular institution?—Certainly.

1903. Do many of your students go in for the National Diploma?—About five or six per cent.

1904. Can you suggest any form in which the examination for that diploma could be improved or commend itself more generally to the bigger institutions?—I am afraid that I do not regard the National Diploma examination as an agricultural educational examination at all. I am entirely out of sympathy with the syllabus and with the method of conducting the examination.

1905. Can you suggest any definite improvement?—I should suggest that the examination should be carried on by people who have had agricultural students under their educational charge, or that they should have had some experience in agricultural education. At present the examination is conducted by a number of experts in their various subjects, but very few of those experts have ever known practically what agricultural students are taught or how much they can assimilate. The chemistry syllabus is evidence of that, it is taken in two parts; and again the botany, which requires rather more observation, is taken entirely in the first year. The agricultural engineering paper is mainly physics, and that can be passed by a student with a good knowledge of physics, and no knowledge whatever of agricultural implements. I would suggest that all the educational bodies of the kingdom should form a body which should really decide upon the future of what is called the National Diploma examination,

and put it upon lines that I think would be rather more in accord with the existing educational institutions, and rather more in accord with the views of existing educationalists.

1906. Working in accord with the Board of Agriculture?—With the Royal Agricultural Society or with the Board of Agriculture.

1907. With regard to the experimental work, do you consider that a central committee—not, of course, to interfere with the local work, but to collate information and to enable meetings to be held for the purposes of consultation and so forth, and to be the channel for dealing with the grants from the central authority, would be an advantage?—I think a central authority for the awarding of grants, and for the differentiation between what are truly experiments and what are only demonstrations, would be of great advantage.

1908. And also for bringing individual experimenters into touch with those doing similar experiments in different parts of the country?—Yes, I think the co-ordination of experimental work wants looking to in this country.

1909. You have short courses in the summer for elementary school teachers?—Yes.

1910. You propose to introduce a scheme for a third year's course of instruction for selected teachers?—It is suggested.

1911. You propose to submit a scheme to the Board for approval?—Yes.

1912. Of course it would be of great advantage if selected teachers from the rural districts could obtain a year's training at such an institution as Wye?—Yes, provided the student had already gone through two years at a training college and had shown evidence of being adapted to rural teaching.

1913. That course, I take it, would only apply to certificated trained teachers?—That is all.

1914. The regulations of the Board permit it already?—They do, but it has not been taken sufficient advantage of.

1915. You are familiar with the Swanley Horticultural College for women?—Yes.

1916. Can you kindly give the Committee your impression of its work?—My impression of Swanley is that the work has very much improved in the past five years. It affords excellent practical instruction to students in horticultural work and at the same time the scientific work is given, not perhaps as satisfactorily as it might be done, but still as far as their resources go I think it is given fairly satisfactorily, and Swanley is doing most excellent work in horticultural instruction. Where Swanley wants strengthening up, if it is thought desirable, would be on the scientific side of the college.

1917. The institution suffers from want of funds, I believe?—Yes.

1918. (By Mr. Latham.) I see you say your students are about 15 per cent. drawn from the agricultural classes?—15 per cent. from the farming classes.

1919. You go on to say further on that you do not consider a large percentage of the sons of farmers are now following the profession of their fathers?—A great many in our district do not do so now.

1920. You say the farmers of the future seem to be in course of being recruited from the mercantile and professional classes?—That is so certainly, in our experience.

1921. How much experience have you had in the South of England?—For the last five years. I may say that I noticed it much more in the South of England than in the Midlands.

1922. Do you consider that the sons of these professional and mercantile men are likely to make as good farmers as the sons of the old farming class?—I do not see why they should not. Several of the old students of the college who are now farming were drawn from those classes, and they are doing well.

1923. They are more easily led by science than the old-fashioned farmer, I presume?—I think they go rather more into details, but I think the old-fashioned farmer can still beat a good many people now. In our district, however, I know that when I have asked the farmers whether they are going to send their sons into farming, they have said "No," they are going into engineering, or they are going to be doctors, or into some of the other professions. I have asked them "Not into farming?" And they have said "No thanks, I have had enough of that."

Mr. M. J.
R. Dunstan.

8 May, 1907.

Mr. M. J.
R. Dunstan.
8 May, 1907.

1924. You take it from that, I presume, that following upon the bad times that have come upon their own business these people have had enough of it, and they do not want their sons to have the same experience?—Yes, they say they do not care for them to go into farming.

1925. (By Lord Belper.) I asked you before what your view was with regard to the allocation of the grants given by the Board of Agriculture. I do not know whether there is anything you would like to add or supplement to the answer you gave me the other day?—With regard to the question of the awarding of the grants in relation to the amount of salaries paid by the institution?

1926. Yes?—If the salary list was properly inspected and care was taken to see that the prospect of an additional grant from the Board was not used merely to augment salaries irrespective of the efficiency of the individual, I think that the salary expenditure might well be taken as an index of the efficiency and of the extent of the work of the college.

1927. I think you rather made a distinction between the positions of different colleges with regard to the salaries of their respective staffs?—Yes.

1928. That I suppose you consider is a matter that ought to be taken into account in arriving at any grant based upon the amount of salaries paid?—Quite so. Take for example a college that is losing or likely to lose its Head, or one of its very efficient servants. The reason perhaps is that he is getting another position with £100 or £150 more. The college would say possibly to the Board of Agriculture, "We think he is a thoroughly good man, and his work is very greatly to the advantage of the college, and we are prepared to give him another £75 a year if we can look forward to your grant recouping us to the extent of another £75." In that way you distribute the Board of Agriculture's grant with the local grant.

1929. That presupposes that you are going on with the present grants and that the Board of Agriculture is only paying a certain addition in relation to the addition that the governing body themselves are giving?—Quite so.

1930. But supposing the whole question of the allocation of the grants were reconsidered *ab initio*, are you prepared to say that you could allot those entirely upon the amount of salaries paid without other considerations?—No, you could not. The salaries paid in different institutions varies so greatly that there would have to be a thorough inquisition into the salary list, I suppose, of every college.

1931. I suppose you would consider it would be desirable that some consideration at all events should be given to the amount of grant contributed by the County Councils at present?—Quite so, certainly.

1932. And also to the total expenditure of the particular institution to which the grant is given?—The total expenditure on educational work. Of course, the total expenditure of a college like Wye compared with the Armstrong College, for example, is very different. Our expenditure is very much greater than theirs, but ours includes, of course, the board and lodging of the students, which must be cut out from the total expenditure.

1933. (By Lord Barnard.) I think when you were here the other day you said you would, when you came again, try and get us some further information as to whether there was any endowment to your college?—I have brought a copy of the scheme with me. There is no endowment at all. The schedule shows that we possess the buildings known as Wye College, with site, field, stables, and out-buildings. That is the endowment of the institution. That we paid £1,000 for, and we contribute £12 10s. a year out of our income to the local school authorities, so the endowment is a negative one in our case. We have paid for this. There are just one and three-quarter acres of land.

1934. We will not go into details, thank you. I only wanted to know whether the institution had been subsidised by endowment?—No.

1935. Perhaps you had better let me have a look at that scheme?—Certainly. (Handing book.)

1936. I believe the counties of Kent and Surrey have a very considerable area of woodland, have they not?—Yes.

1937. So that amongst other classes of labourers, supposing you provide instruction for labourers, you would have to consider woodmen as well as farm labourers, would you not?—Yes.

1938. You would regard that probably as a very important factor. In addition to the instruction in farming

you would consider instruction in forestry a very important factor?—Quite so; but forestry in the south of England is not of a very advanced character at present. It requires to be developed.

1939. Do you not think it is advisable that it should be?—Undoubtedly.

1940. Do you think that some advance should be made in the instruction of forestry?—Undoubtedly.

1941. (By Mr. Middleton.) In reply to Mr. Medd you said that in your opinion a central committee would be valuable for the purpose of co-ordinating work?—Yes.

1942. You might just explain what type of work you think requires co-ordination?—A good deal of the demonstration work which is not co-ordinated at present—a good deal of the work which has been set out in the Agricultural Education Association's Memorandum for a long time past which has never properly been taken advantage of.

1943. Then your reply referred to these demonstration and local experimental plots?—Yes.

1944. Were you thinking at all of what you formerly referred to—research work?—No, I think research work must be left to the individual; I do not think any central committee should lay down lines for research. What they certainly might do is to decide whether a particular kind of research work or a particular individual should have a grant or not, but I think the lines of research work should be left absolutely unfettered. A central committee might suggest, but they should not control.

1945. Do you think that any considerable extent of overlapping goes on in connection with research work. It has been suggested that there may be some wasted labour?—I do not think there is sufficient research work done to let in any question of overlapping.

1946. Do you know of anyone engaged in research work in the country who is not aware of what has already been done on the subject?—I should think they would be very badly equipped for their work if that was the case, because the first business of a researcher is to ascertain what has been done in the field before he commences to work himself.

1947. I understand now that your reply refers altogether to demonstration work?—Yes.

1948. You think that demonstration work does require some co-ordination?—Yes.

1949. You referred to the fact that the Agricultural Education Association has been attempting to deal with that question for years?—Yes.

1950. In your opinion that Association has not been successful in co-ordinating the work?—I do not think so altogether.

1951. You think, therefore, that some outside pressure is necessary?—Yes, some outside suggestion I would say rather than pressure.

1952. You would not trust to voluntary effort?—I should like to see voluntary effort co-ordinated in a small way, and possibly controlled in a small way.

1953. (By the Chairman.) You are of opinion that agricultural education in England should be centrally organised, but you are in favour of institutions being left to a great extent independent in providing for the wants of local education?—Yes, I believe there should be a certain amount of elasticity in the co-ordination of the whole.

1954. You think that a national examination for all the colleges, bringing all the colleges into line, would be desirable in preference to an examination carried out in the locality in accordance with the teaching which is there given?—I should like to see a good strong examining body appointed to deal with that, conducted on educational and scientific lines to which all the colleges could subscribe.

1955. Which should be under the control of the various colleges?—Yes, they could form an examining council and nominate examiners. I do not see why a strong educational council should not be formed to which the universities and agricultural colleges could nominate delegates, and they could frame a scheme of examination which would be elastic enough to suit all their needs.

1956. With a considerable amount of option?—With a considerable amount of option.

1957. So that the agricultural colleges could send their students there to be examined on the lines on which they had been taught?—Quite so.

1958. It would be a national guarantee of the students' efficiency?—Quite so.

1959. (*By Lord Moreton.*) How would you propose that such an examination should be paid for? It would cost a certain amount of money, and have you any idea how the financial side of that question should be met?—The payment would be, of course, for the examiners and examination expenses, and rooms and so on. I take it the universities would probably meet the council in that matter. I do not think with regard to the hire of rooms and so on, for examination purposes if the examination were held at one time at the London University, another time at Leeds, and a third time somewhere else, and so on, that there would be very much expense on that score. Then with regard to the question of examiners' fees, I think that would be met partly by the candidates' fees for examination, and I think the universities and the colleges would be prepared to give a small grant towards the central council which would defray the expenses.

1960. Would you be in favour of such a body taking the dairy examination work too?—They might do, of course, but there are so few dairy colleges in England that I think that might be left under the control of the dairy colleges themselves.

1961. Are you in favour of such a body being presided over by the Board of Agriculture, or would you have it entirely unofficial?—I should have it presided over by the Board of Agriculture or the Royal Agricultural Society.

1962. (*By the Chairman.*) What relation would the degree at that examination have to the degree of the London University?—They would be two entirely distinct things. The degree of the London University implies first of all a matriculation examination; secondly, an intermediate examination; and thirdly, a final.

1963. There would be no need for further instruction for students who took that examination?—No.

1964. You are contemplating an examination for another class of student?—Yes, for another class of student who is not good enough for the graduate examination; the the graduate examination means a very long course.

1965. (*By Professor Middleton.*) You think there is a

necessity for a second grade national examination?—A national examination.

1966. Of a second grade inferior in type to the university examination?—I think so. I think it would be desirable, more perhaps from the point of view of foreigners or our own colonies who require an examination or some evidence of that kind as a guarantee of a student's qualifications.

1967. But surely they take the evidence of a university degree?—Undoubtedly they take the university degree as evidence, but I mean in the absence of a university degree. Each college in the past has been in the habit of setting its own standard of diploma, and these standards vary enormously as you know, and what we want is some, as it were, national standard.

1968. (*Mr. Acland.*) You want to set up a second grade examination for the advantage of foreigners and others?—Yes, I think that is necessary. It is a test of training as well.

1969. Can you have anything like a uniform examination as a test of training, or do you think inspection is a better word than test?—If you insist on your students having gone through a number of years or terms course of training, then you supplement your examination with a test of knowledge and training as well. Take the London University examination. The student is not examined necessarily in subjects but has to provide evidence of having attended a systematic course of instruction on certain subjects.

1970. Do you think that that class of examination would be of educational benefit as well as a convenience?—No; I do not think it would be of very great educational benefit. It is simply for convenience and for the external evidence of a student's qualifications. That is what is wanted.

1971. Which could not be gained by inspection at the institution or by the report?—It could be gained in that way, but I very much doubt whether external bodies or external authorities would take the same notice of an inspection as they would of a definite examination. We have not got rid of the bogey of examination yet.

*Mr. M. J.
R. Dunstan.*

8 May, 1907.

Mr. WILLIAM MANNINGTON, Chairman of the Agricultural Sub-committee of the East Sussex County Council, called and examined.

1972. (*By the Chairman.*) You are a member of the East Sussex County Council?—I am.

1973. And Chairman of the Education Committee?—Of the Agricultural Sub-Committee of the Education Committee.

1974. You are Chairman of the Governing Body of the Agricultural and Horticultural College at Uckfield?—Yes.

1975. Will you give us some evidence of the work that is done by that college?—I would prefer to answer any question. I mean I do not quite know what you want; and as to details of the work, I think you will find that Mr. Woodhead, the Principal, would be better able to give you any information.

1976. The college was founded in the year 1894 by the East Sussex County Council?—Yes.

1977. For the purpose of supplying at moderate fees practical and scientific instruction in agriculture and horticulture?—Yes.

1978. To those who intend engaging in agricultural and horticultural pursuits?—Yes.

1979. Also to assist others who are actually engaged in farming?—Yes, in any way possible.

1980. Are the farmers favourable to your college?—They are now. At first we had a very unfortunate history, but we have got through that. We had a lot of trouble and that alienated the farmers a good bit; but under present conditions the farmers are rallying round very well indeed, and they frequently ask for information, and also send samples for analysis and that kind of thing.

1981. You are conducting experiments in various parts of the county?—We are.

1982. Are any experiments attended by the farmers?—Yes, there is a good deal of interest taken in them, and we also have experiments on our farm which we are carrying on in connection with the college.

1983. Is the farm the property of the college, or is it rented?—It is rented.

1984. What is the size of the farm?—102 acres, I believe, and the rent is £100.

1985. Do you do any work in connection with dairying?—Yes, we carry on a dairy at the farm, and the students do the practical work of milking, and also butter-making.

1986. Are the students mostly sons of farmers who attend the college?—They are mostly sons of farmers, but we naturally want the college filled up, and where we have applications from others we entertain them. We always let farmers' sons stand first, but where we have room, we do take other students. We now take them at a price at which they pay us. The out students cost the county nothing at all: they pay £75 a year now.

1987. Are the students of the county admitted by scholarships, or how are they admitted?—There are five scholarships—we limit ourselves in those to the sons of farmers. We have just initiated a new scheme by which sons of farmers who cannot afford to pay the full fees, provided they are sons of *bona fide* farmers in the county, are admitted at £10 a year. Of course we lose money out of them, but it is a class that we feel wants assisting more than any other.

1988. Are they resident at the college?—They are resident at the college.

1989. What number have you of those?—Six.

1990. I understand certain members of the County Council are not very favourably disposed towards your institution?—That is so; but I think it is in no way connected with the carrying on of the college.

1991. With regard to your finances; can you give the Committee any facts with regard to the mode in which you meet the expenditure?—We, of course, have always had our expenses met by what we term the "whisky

*Mr. W.
Mannington.*

Mr. W.
Mannington.
8 May, 1907.

money;" but now, owing to the Education Act of 1902, the demands upon that fund for secondary education are so great that we cannot meet it out of that fund, and that is partly where the difficulty comes in, because it means a rate, and that has been the ground upon which the hostile action has been raised—in order to avoid the rate; but they cannot avoid the rate whether they carry on the college or not—I mean the demands of the elementary education are so great that we must have a rate, and we may as well face it; but that is the hope of some, that they will save it.

1992. (*By Lord Belper.*) What is your rate for secondary education?—We have not got a rate yet. I forget whether it is coming forward, or whether we have just passed it, but we are going in for a halfpenny rate. It is not in working yet.

1993. (*By the Chairman.*) You say a halfpenny rate has been proposed?—Yes, it has been proposed and it has been carried through the Council. The question is rather sprung upon me, but I believe that is correct—at any rate you may take it that it will be carried through the Council if it has not already been.

1994. Do you think that is insufficient?—I think we shall have to go for more, unquestionably; but we must have the rate, whether the college is carried on or whether it is not carried on; the college does not stand or fall by that.

1995. What is the amount of the grant that you receive from the Board of Agriculture?—£250 now; it has just been increased by about £50 two months ago.

1996. Are there any lectures given in the county?—Yes. Our agricultural lectures are confined to farmers' clubs throughout the county. Whenever they are asked for they get them, but we feel strongly—only it is not just the time to go in for it—that we want a second agricultural lecturer. We think a good deal of good will be done, particularly now that we have the sympathy of the farmers, by another good lecturer on agricultural subjects only. We also have a horticultural lecturer, and also a poultry lecturer who goes round the county and who has met with most extraordinary success. The interest which is taken in the question of poultry rearing and so on is really beyond our expectations altogether: we have a good many poultry on the farm.

1997. Your students work on the farm?—Yes.

1998. Your lecturers belong to the staff of the college?—Quite so.

1999. The farmers, you say, come to the college and ask for advice?—A good many do now, but Mr. Woodhead can give you more particulars about that than I can, because he is familiar with it all.

2000. You say now the farmers are quite favourable to the college?—On the whole, very.

2001. They understand its practical usefulness?—I think it is widely appreciated now. I think the fruit stations which we have all over the county have materially assisted that—I mean they have enlisted a sympathy which did not exist before. We have six fruit stations where we plant fruit and keep them in training and so on as an object lesson for the neighbourhood because they cannot all come to Uckfield.

2002. Are there any local committees throughout the county?—In what way?

2003. Local committees composed of farmers who recruit for the college and who control the experiments?—No; our lecturer goes out wherever there are experiments and watches them himself. Of course the farmer on whose land the experiment is carried out works with him, or rather he works with the farmer.

2004. Who sends out the notices of those experiments so that other farmers may come and attend?—We circularise them.

2005. That is done by the Education Committee?—By the agricultural sub-committee.

2006. Other counties do not contribute to your college?—No. Surrey and Kent have a college of their own at Wye, and West Sussex, for some reason or other, does not join in. There was some talk of West Sussex doing so some time ago, and I fancy that they will, after a time, join us. I think in the course of time changes will take place, and that will happen. I think there is a good strong feeling among some of the members of the West Sussex County Council in favour of it. My reason for saying that is that we have recently had a deputation from the West Sussex County Council on the subject—Mr. Hubbard was the chairman, and I think there is a strong feeling in

favour of some sort of joint action being taken, but it has not ripened yet.

2007. You are sanguine about that, that the West Sussex County Council will join you?—I am, personally, but I am speaking entirely for myself.

2008. (*By Lord Barnard.*) How is the college governed and managed and controlled?—Mr. Woodhead is the principal.

2009. I do not mean with regard to the teaching staff. Who is the governing body—who has the control of it?—The agricultural sub-committee.

2010. How often do they meet?—Every month.

2011. At the college?—Not always at the college. In very bad weather, when one does not want to go round the farm, we meet at Lewes.

2012. Do you go minutely into the organisation and the subjects of the curriculum and that sort of thing?—We go into everything as carefully as we possibly can.

2013. Do you control the finance?—Yes, subject, of course, to the County Council.

2014. You report to the County Council?—Yes—to the Education Committee rather.

2015. Who acts as your clerk or secretary?—Mr. Young, the organising secretary of the Education Committee.

2016. Do you consider that is a satisfactory method of working an institution of this kind—are you satisfied with it?—Absolutely satisfied.

2017. Are the members of the committee mostly, or perhaps all of them, engaged or interested in agriculture?—Several of them are. I am a farmer to a considerable extent, and I have four sons farming in the county, so that I am tolerably interested in agriculture, and I have one of my own boys at the college.

2018. Do you or the Committee ever meet the Government inspector there?—We have met Mr. Brooke-Hunt on two or three occasions, or more than that I think.

2019. Do you consider that the Board of Agriculture's intervention through Mr. Brooke-Hunt is of assistance to you?—I think it has been very useful indeed; we are very glad to have been in touch with him.

2020. You are satisfied with the control of the Board?—Entirely so. I think, if I may say so, Mr. Brooke-Hunt, who has been there several times, will confirm what I say as to the improvement that has taken place in many things.

2021. I see by the official report of the Board of Agriculture that there is nothing done in West Sussex at present in the way of agricultural education at all?—Nothing.

2022. Supposing West Sussex should consider that it could best carry on this work through your college, would you have to extend your college?—We should now, because we are quite full.

2023. You would want further buildings and more teachers?—Yes, we have plenty of room for extension: we have about four acres of ground.

2024. Is it freehold?—We are buying it. There is a £4,000 loan, and we are paying it off together with the interest.

2025. I am not familiar with East Sussex. Excluding of course any county boroughs, if there are any in the area, is agriculture the principal industry in East Sussex?—Certainly. That was recognised by the County Council, and that was the reason of the establishment of the college; it is purely an agricultural county.

2026. What is the nature of your 100-acre farm?—Mixed—arable and pasture. We keep a few sheep—we have only 100 acres, you see. We breed Southdown sheep; we keep shorthorn cattle, cross them with a Sussex bull, and rear our heifer calves; and we carry on a dairy, too. That is an addition that we have just lately made.

2027. In fact the work you carry on is typical of the agriculture of the district?—Yes.

2028. Do you grow hops?—No; I have myself, but we have stopped that. We had no oast and could not carry it on at the college, and I suggested we should do away with the hops. We had no oast, and I suggested to the Committee that it could not be carried on to any useful purpose, so we stopped it. I may say for the information of the Committee that when we took the farm about thirteen years ago, it was just about the time I entered on the Council. I opposed it for all it was worth because it was such an absolutely wretched farm. I said then, and I say here, that I would not have had it if they had given it to me rent free; but we have laid out a good

bit of money there as a county authority, and the farm is now in first class order, and to give it up at such a time as this seems to me an absolutely unwarrantable policy.

2029. Have you a lease of it, or is it only on annual tenancy?—Only on annual tenancy. Then the horticultural garden—I was not a party to it myself, and I have no responsibility for it—but we have laid out a good deal of money upon that, and that we shall lose altogether if we leave the farm. The thing is practically done, and we should have to give it all up and the landlord would take the whole.

2030. Since you have been associated with the work has it developed considerably?—Very considerably.

2031. Do you think there is scope for further improvement?—I think we shall have to meet it; I think it is a necessity.

2032. Do you think you will have to further develop the institution?—I think so. We have now 22 Sussex students, and at one time we had none.

2033. Naturally—I need hardly ask you the question—you think that development will necessitate further financial assistance?—Yes, but we are carrying on the college now at a less cost than before. We have extended the college, and got our farm into good condition now, and everything points to a less expenditure in the future. When I was appealed to as to what we should require, I said we could do with £300 less; but my Committee said we had better be sure of how we stood first, but everything points in the direction of economy.

2034. Do you look upon a further grant as indispensable to your further development?—I think it would materially assist our position at the present time; that is the crux of the whole thing.

2035. You would not expect that any further Government assistance should be given without perhaps conditions of some kind being laid down?—No, and I should welcome the advice or intervention of the Board of Agriculture; I think that would help us very materially.

2036. If you got further assistance from Government do you think that the Council would meet it by increased financial support?—I do not think we should require increased financial support from the Council itself—you see if we join with West Sussex, West Sussex will have to contribute their portion, and I do not think there is a possibility of our requiring larger support from our own Council.

2037. (*By Lord Belper.*) I just want to understand your financial position in East Sussex with regard to your grant for agriculture. The whole of the part of the grant that you devote to agriculture is paid to the college, is it not?—Yes.

2038. That amounts to £2,345?—That is it.

2039. Your grant from Government for secondary education is £7,120?—Yes. It is gradually getting less, but that is about it.

2040. That is the figure given for the last year?—Yes, that is about it.

2041. You hope to get a halfpenny rate which will amount to about £2,000?—Yes.

2042. So that you spend about £9,000 on secondary education?—Yes. We are now building a hostel at Brighton, and then we have the secondary schools. We are just building a new grammar school at Rye, and one thing and another, and also pupil teachers' centres, and the claims are very heavy for secondary education.

2043. Of course if you have to do it out of revenue, the annual expenditure may be rather heavy?—Yes.

2044. You have no funds apart from what you receive from the Government?—No.

2045. I suppose your county is largely agricultural?—Yes, mainly.

2046. Therefore, that £2,000, although it is a considerable sum, is not more for agriculture compared with other industries in the county?—No. Some ten years ago the rage of the county was—it amounted to a rage—that everything must be done for the benefit of agriculture. I remember opposing a level crossing over a light railway, but the Council would not hear of it, because, as they said, that light railway was going to be of such benefit to agriculture. That, however, has been pulled down.

2047. Can you tell me what the elementary education rate was for last year?—9d. or 9½d.

2048. Do the farmers think that that is a large extra sum cast upon them, many of them paying nothing for

education probably before the Act of 1902 passed?—They did pay rates then; there were a good many Board schools at that time.

2049. But in the places where there were no Board schools the 9d. rate would come as an unpleasant surprise to the farmer?—Yes, it did to myself. There was no Board school near any of my land, and now we have to pay more.

2050. That does create difficulties in the way of raising a further rate for secondary education for these other purposes?—Yes, and then there is a very strong feeling, amongst farmers particularly, and these secondary education people ought to pay for themselves—I am dealing with public opinion all round me—that they are over-educating the children, and they cannot get boys on the farms, and so on. Of course, there is a good deal of hard fact in it, but that is what you have to contend with.

2051. At all events, the fact that they have to put their hands in their pockets to pay a considerable elementary education rate makes it much more difficult for you to raise a secondary education rate?—Yes, just so.

2052. (*By Mr. Acland.*) I suppose you could roughly group the work you do under the work done on the farm, the work attended by the farm students there, the lectures on horticulture and poultry-keeping given throughout the country, and experimental and analysis work done for the farmers—those three branches, the farm work, the lectures, and the experiments and analyses? Which do you think of those three is most useful and appreciated by the farmers at the present time?—The farmers' lectures, and also the analyses; that is really all they participate in, you see.

2053. How many students have gone through the three years' course?—Mr. Woodhead will tell you that; I have not those figures.

2054. I gather that there has been a rapid development in poultry-keeping and fruit-growing by the small farmer in your county?—Yes, very considerable indeed.

2055. Do people find it fairly easy to get land?—That is one difficulty which hinders fruit planting. Of course in planting fruit, particularly apples, and so on, they must have security of tenure, otherwise a man is endangering his position very much if he plants a lot of fruit and has to leave his farm. Supposing he dies, and the farm has to be given up, all landlords are not alike, and some landlords would take advantage of it; and then, again, it is very difficult to bind a landlord down to any agreement when a man lays down a lot of his land for fruit-planting.

2056. There is plenty of demand, you think, for instruction?—Yes, that is evidenced by the attendance at lectures, which is extraordinary in both of those departments.

2057. Do you provide for the board and lodging of the students at the college?—Yes; 33 all lodge at the college.

2058. That makes you full?—Yes, quite full, and we have several applicants waiting for admission; when I say several, two or three.

2059. (*By Mr. Staveley-Hill.*) Do you have any system at the college for the training of teachers at elementary schools in your district?—We are instituting centres now. I am not on that committee, so I cannot give you any information about that.

2060. Do you have market-day lectures such as have been described to us by previous witnesses?—No, we do not have those.

2061. Is there any provision for veterinary instruction?—Yes, we have veterinary lectures. I did not mention that, did I?

2062. No?—We have veterinary lectures every week.

2063. At the college?—At the college.

2064. (*By Lord Moreton.*) Have you done anything towards teaching the sons of labourers on the farm?—No, we have not done anything of that kind, but I think our elementary schools committee is taking that question up a bit. You see they must have instruction where they are. I do not know what the committee are doing about it, but we are not dealing with that.

2065. You are not considering the question whether you could do good work by taking young labourers on the farm and giving them instruction?—There are not many young labourers about.

2066. (*By Mr. Latham.*) You spoke of your farm being

Mr. W.
Mannington.
8 May, 1907.

Mr. W.
Mannington.
8 May, 1907.

about 100 acres, and that you paid £100 a year for it?—Yes.

2067. Is that the rent now, or when you took to it?—When we took to it. We have the farm at the same rent, but we have increased our rent by certain arrangements with the landlord by which we have had certain buildings put up which we pay interest on. I think our rent altogether amounts now to £130 a year, but I am speaking from memory.

2068. The County Council up to now have supported the college?—Yes, and it does now.

2069. You are rather afraid it will not do so in the future?—There is a motion for a committee of enquiry to enquire into the college.

2070. I think you said you had 23 farmers' sons?—Twenty-two.

2071. How many pupils have you at the present time?—Thirty-six.

2072. Will you kindly tell us what the professions of those students' fathers are?—Mr. Woodhead has all those particulars.

2073. Will you tell us what these lectures are principally on?—I think it is limited to the demand from the farmers' clubs. They invite the lecturer to give a lecture on a certain subject.

2074. That is quite sufficient. You consult the farmers' clubs as to what sort of teaching they should have?—They invite us, and we respond.

2075. You said you grew hops, but that there were none grown now at the college?—Yes.

2076. Did you go to Wye to learn hop growing?—No, I did not.

2077. Does your county get any instruction in hop growing?—I had instruction in hop growing when I was a boy—

2078. I only want to know how your county does in the way of getting education for hop growing. Do they have to go to Wye College?—No, we do not.

2079. Would there be any wish that the agricultural education should be on much broader lines if you had more money?—If we had more money we should consider what we could do with it.

2080. You made the remark just a few minutes ago that that was what you would do if you had the money. You said if you had more money you could probably offer the farmers more in the way of teaching?—I do not think I said so, but if I did I did not mean quite that.

2081. I did not think you did mean it when you said it, but you did say it?—I meant to say that if we had more money we could do more and enlarge the work that we are now doing. My meaning was that if we had more money we could have more pupils, but I did not intend to say that we should widen our field of instruction.

2082. The syllabus here gives one the idea that you teach a good deal?—So we do—we teach land surveying, and chemistry is a very strong point with us.

2083. What you really meant to say was that if you had more money you would be able to have more students, and not that you might have a more extended curriculum?—We might have a more extended curriculum if it was necessary, but what we want to do is to meet the demand for instruction.

2084. May I ask one more question with regard to this veterinary hygiene that you were asked about by my neighbour. Will you tell us how far you go in the way of veterinary hygiene?—I live 30 miles away, and I am not present at the lectures, and I could not tell you that.

2085. Is there any feeling in the district with regard to the teaching of it?—Personally, I am not in favour of it. We went in for one department of it, and that was shoeing, but that was an absolute failure. We bought a concern in the South of England, and I was against that at the time, and we sold it the other day for £5.

2086. How far have you gone in that way?—It is not practical. As far as I have any influence with the college, and I have a good deal, it is to give the students a good practical knowledge. They have the opportunity which I never had of learning scientific farming there, but they must have a practical knowledge as well. Without the practical knowledge it is no good at all, and that is not practical, to my mind.

2087. What is not?—Shoeing.

2088. Not practical?—No; I do not think a farmer

ought to shoe his own horses. I think he could employ his time much better in other ways.

2089. If he knew how to shoe his own horses he could tell whether his horses were shod badly or whether they were shod well?—All I can say is I have never shod a horse in my life myself, but I can tell whether a horse is shod badly or whether it is shod well.

2090. Yes, I should say you could. I should say you are a very good judge of whatever you see?—I am afraid you are speaking ironically.

2091. No, I have never seen you before, but I can tell from your evidence pretty well what you are?—Thank you.

2092. (*By Mr. Medd.*) Have you an Agricultural Committee in your County Council?—Yes, I am Chairman of it.

2093. All the agricultural and horticultural instruction is done by the County Council?—Yes.

2094. At the commencement of each year do you formulate a scheme to cover the whole of the instruction of the county, or are these lectures given spasmodically, so to speak, or just on demand at any odd time?—They are given outside just when asked for.

2095. You do not at the commencement of the year attempt to sketch out a scheme for the whole country; you depend on application for lectures from time to time?—Yes, and we have quite enough to do to meet those.

2096. I can quite understand that, but of course, looking at the Report on your work in East Sussex, there are certain gaps. You hope to make some provision for the training of teachers, do you not?—Yes, but that is independent of this college altogether; we have nothing to do with that.

2097. Probably the facilities for the training of the teachers could be or would be provided at this college?—No.

2098. You would not provide those facilities?—No.

2099. I may say that such facilities are provided at many of these colleges?—There is no thought of that at our college.

2100. With regard to continuation schools, you do not provide any horticultural or agricultural instruction through your continuation schools?—No.

2101. Nor have any of your elementary schools school gardens attached?—No.

2102. Those are all features in which interest, and, to some extent, knowledge may be imparted in agricultural matters?—Yes.

2103. Do you think that your Agricultural Committee would be willing to submit annually a scheme covering the agricultural instruction of the county to the Board of Agriculture for advice and suggestions?—I see no objection to that at all; we want to learn as well as to teach.

2104. Exactly, and you have spoken very highly of the assistance that Mr. Brooke-Hunt has given you?—Yes.

2105. Do you ever consult the Board of Agriculture in other respects in reference to the work of your county, apart from the college itself?—No, we have had very little communication with them; only his visits, and the visits of the President.

2106. Do you not feel, as a practical farmer, that you would get some assistance from the experience of the Board with regard to different types of instruction, and so on?—Yes.

2107. I see you have classes for farmers' sons?—Yes, but they are not responded to.

2108. I was going to ask you what the farmer thinks of those?—They have not been taken advantage of at all.

2109. Is not it the most difficult problem in agricultural education to attract the sons of small farmers and the small farmers themselves?—Yes, it is; but, of course, there are reasons why they cannot take it up.

2110. What should you think are the objections of the small farmer?—In the first place, he has opportunities at home, and he likes his home better than going back to school again. I tried hard to get my son, next to the one who is at the college now, to go to the college; he was living at home with me learning farming before he went into business, and I tried hard to get him to go to the college for a twelve weeks' course, but I could not get the boy to go, and I take that as a key to the whole thing. Then, of course, there is the expense; small farmers cannot stand it.

Mr. W.
Mannington.
8 May, 1907.

2111. Probably you are a large farmer yourself?—Yes, I am a large farmer myself.

2112. If you had the money in East Sussex, what particular forms of instruction do you think would be most useful for small farmers and their sons, or for the cultivators of small holdings? What would you suggest?—I think chemistry is a study which is most valuable. I miss it every day myself, and I only wish I had had the same opportunity when I was young of acquiring a knowledge of it.

2113. Then you would suggest these short courses that you already provide?—I think so, and land surveying and that kind of thing.

2114. I was trying to find some means by which you could suggest the difficulty you experience now in attracting them could be overcome?—Yes.

2115. Of course it is a most difficult problem?—The one question is money.

2116. And the disinclination to spare a lad who is wanted on the farm from the farm?—I think that will come, because the men themselves are becoming better educated, and I think they recognise the advantages a boy would get by attending.

2117. If we are to have small holdings we must have the men trained to cultivate them. What would you think a most appropriate training for a young man of that type?—I cannot see where they could have a better training than at such an institution as ours.

2118. But then the question of money comes in?—Yes.

2119. Do not you think you might be able to provide attractive instruction for them, say beginning at the age of 14 up to 16 or 17?—That is our very aim, because what we want to do is not to let the boys have a year or two away from school first, but that they should come straight from school to the college, and we limit the age now to that end, because we think it is much better for them to do that.

2120. Mr. Woodhead can tell us the limits with regard to age, and so on?—Yes.

2121. (*By Prof. Middleton.*) You told us that your lectures have been very successful. Do you have any lectures or demonstrations at the college farm? Do you get the farmers to come round and see the farm?—Anyone can who likes, but of course there is this difficulty that farmers live so wide apart, and it takes so long to get to and from.

2122. I take it that these lectures to which you referred, were lectures given in school rooms and so on?—Yes.

2123. Not in the open in connection with demonstration plots?—No, we have no demonstration plots.

2124. So that you can have no lectures in connection with them?—The lectures are generally at the farmers' clubs; most of the farmers join these clubs.

2125. You referred to the facilities of analysis being taken advantage of by the farmers in your county, and you said that that form of work was attractive to the farmer?—I think so, judging by the increased number of analyses that we have now.

2126. You have a distinct increase?—Yes, but Mr. Woodhead will have full particulars about that.

2127. There is only one other matter I want to ask you about. To go back to the subject of shoeing which you said was a failure in your county, can you explain in any way why it failed, beyond by saying that it was not practical? Do you mean you had not got a practical teacher?—No, we had a practical teacher, and we had a shoeing shop, and all the materials.

2128. Did the country smiths take no interest in it?—The country smiths were all up in arms against it, but they need not have been frightened, because there was no enthusiasm over it, and for my part I do not think it is a practical thing.

2129. You mean the country smiths knew more than your students did?—I think they ought to, and I think they would know more even after the students had learned all that there was to be learned.

2130. (*Mr. Davies.*) Are the agricultural conditions in West Sussex the same as in your particular district?—Pretty much so; there are just a few hops, but the conditions are practically the same.

2131. Then your college would meet their requirements if they were to join with you?—Yes, I do not see why not.

2132. Supposing the Board of Agriculture increased the grant they make to you, do you think that the West Sussex County Council would join in the scheme?—I cannot say; I have no means of knowing. I only know that when we met a deputation from that Council several members were very sympathetic, but it fell through, and I gather—at least I believe I am right in saying it—that a certain portion of the Council were against it.

2133. I think you told the Committee that in West Sussex they have no agricultural lecturers ever going through the county at all?—No, we let our lecturers go there sometimes, when they ask for them.

2134. Then they pay for them of course?—Yes, they have paid for them.

2135. I think you told us that your students worked on the farm?—Yes.

2136. Do you pay them for working on the farm?—Oh, no; I do not think that the labour we get from our students is worth anything.

2137. Do you make any conditions that a student, before he comes to your college, has spent a certain amount of time on a farm?—Yes, unless there are certain reasons why he should not have done. There are one or two who have not been on a farm much, but nearly all have. Some of them take particularly to horticulture, and they confine their attention to that, and there is plenty to interest and occupy them there.

2138. That is a condition laid down before a student is accepted, is it?—As a general rule they have all been on a farm.

2139. I think you told us that the college is a residential one?—Yes.

2140. You differentiate between the students who come from your own county, and the students who come from outside?—Only in the matter of terms.

2141. What fees do the students from your own county have to pay?—£50 a year for the county, and then they have an opportunity of getting a scholarship of £30 a year.

2142. How are the scholarships awarded?—By examination.

2143. Held by the college authorities?—Yes.

2144. You have no classes outside in the country districts?—No classes, except such as are formed locally, and who invite lecturers and we supply them with lecturers.

2145. At the farmers' clubs?—At the farmers' clubs and also on matters of horticulture anywhere. Our horticultural lecturer goes widely round the whole county and he has done a lot of good.

2146. But there are no evening classes specially for farmers' sons?—No.

2147. With regard to the analyses is that a paying concern?—Yes, that pays.

2148. Does the County Council make a grant towards it, or does each man who wants an analysis made have to pay a certain fee?—Everybody who wants analyses made has to pay a fee.

2149. That covers the cost?—Yes. There was a motion some time ago made by the County Council that farmers should have the analyses free, but I opposed it as a farmer, because I do not think it is any good to have these things too cheap, and as a matter of fact, it is mostly large farmers who require these analyses made and they are in a position to pay for them. Small farmers do not require them so much, because they do not deal with such large quantities, and whenever they want information of that sort they mostly go by what they are told by others. Therefore, we would have been letting a lot of men have for nothing who could well have afforded to pay for.

2150. Do you carry on any field trials in different parts of the county?—Yes.

2151. Do the farmers come to see the results of those?—Yes.

2152. Are they followed by a lecture?—Yes. That generally takes place at the farmers' club.

2153. Not on the ground itself?—Not, on the ground itself.

Mr. S. A. WOODHEAD, Principal of the Agricultural and Horticultural College, Uckfield, called and examined.

Mr. S. A.
Woodhead.
8 May, 1907.

2154. (*By the Chairman.*) As regards the courses of study at your college, you have a three years' course qualifying for the diploma of the college?—Yes.

2155. Perhaps you will describe to us what that course is?—A diploma course includes everything that we teach at the college. The students must attend for three years and must pass all examinations of course, and a final examination as well. That is the diploma course. Then there are four certificate courses. They can take either the agricultural certificate, or the horticultural certificate, or the poultry-rearing certificate, or the certificate in surveying. In any case they must attend for two years, and take certain subjects. For the agricultural certificate they take agricultural botany, chemistry, geology, elementary mensuration and surveying, book-keeping, veterinary hygiene, carpentry, physics and agriculture; for the horticultural certificate they take horticulture, carpentry, agricultural chemistry, agricultural botany, and agricultural entomology; for the poultry-rearing certificate they must take poultry rearing, carpentry and entomology; and for the certificate in surveying they take the Surveyors' Institution course. Practical work in all the above courses is compulsory.

2156. Is there any book-keeping?—Yes, book-keeping comes under the head of the agricultural certificate.

2157. Then you have a separate class for land agency students during the winter?—Yes, that is so, from October until the examination in March.

2158. Is that a course of one year or two years?—It is only held during the winter; it is not really a course, it is a sort of coaching class for the examination. Some students in land agents' offices come to the class, and we have a certain number in the college who are going in for it—generally one or two per year.

2159. Do you consider after that course that they are qualified as land agents?—No, I do not say that. Some of them are in land agents' offices, but those who are going in for the college course must attend for two years. It has been decided by the Surveyors' Institution that they must go through our full two-years' course before they can sit for the examination, but we specially coach them in the winter, along with the evening students.

2160. First of all they take the certificate course?—That is so, and at the end of that time, if they take our two-years' course they can sit for the Surveyors' Institution examination as well, but they cannot take the Surveyors' Institution examination until they have completed our two years' course.

2161. They must have obtained a certificate for the two years' course, and then they have a winter course in addition, is that it?—No. Suppose a student enters in May, and stays with us two years, at the end of that two years he can take our certificate, and the Surveyors' Institution as well, but if he is in a land agent's office he attends the winter course only.

2162. Then they are outside students who attend the winter course?—They are outside and resident students.

2163. A certain section of students attend the two years' course and get a certificate, and then pass the Surveyors' Institution examination, and that is recognised by the Surveyors' Institution?—Yes, that is the case, only they need not necessarily get our certificate before taking the Surveyors' Institution examination, but they must have attended our two-years' course.

2164. There are other students who are already in land agents' offices, and they attend the winter course?—Yes, they generally attend for agriculture, agricultural chemistry and geology. We do not take any other subjects. Those are the three subjects in which they really cannot get instruction in a land agents' office.

2165. What is the number of students who take a two years' course, and what is the number who take the winter course?—All our students are taking the two years' course, except one who has been with us for three years. He is waiting until he is old enough to go in for the Surveyors' Institution examination.

2166. Then you have a 12 weeks' course for farmers' sons?—Yes, that is from November to the end of February.

2167. Is that well attended?—No, we have no room for them; we get so many two-years' students that we have no room for any short course students at all.

2168. Is that 12 weeks' course in existence or not?—No, not at the present time. We have no one attending it.

2169. That is only what you propose to do?—No; we tried it one year, when we had, I think, two vacancies, but no one applied, and since then we have not had room for them at all.

2170. Do you consider that it is an urgent need that provision should be made for the sons of farmers in that way?—I think so, certainly.

2171. Will you give us the total number of students who have received instruction during the last five years?—115.

2172. There has been a gradual increase during that time?—Yes, a gradual increase during that time. We started at 19 and now we have 36.

2173. Then the type of student who attends?—Thirty of these are sons of farmers but in 26 cases their parents were deceased. I can safely say that 13 of those also were farmers. There are 16 tradesmen's sons, 11 from the professions, eight from the army, six schoolmasters, five clergymen, three bank managers, one missionary, five men of means, and four unknown.

2174. Fully 80 per cent. I see of the past students are at present engaged in farming, horticulture, poultry-rearing, or land agency?—That is so. There are 68 per cent. farming (that is including horticulture and poultry-rearing), and 15 per cent. engaged in land agency.

2175. Do any of your students, taking the diploma course, afterwards take up the teaching of agriculture?—No, our course does not go far enough to produce lecturers.

2176. Your course is distinctly intended for farming?—That is so.

2177. Then which side of the college work do you consider is the most important?—Certainly the agricultural side; but horticulture and poultry rearing are very popular.

2178. In the county?—Yes, they are very popular indeed at present.

2179. Do you think that more lectures to farmers throughout the county than are at present given might be given?—In the county on agriculture?

2179A. Yes?—Certainly.

2180. Do you think that that might be encouraged by starting local committees who might give encouragement to farmers and invite lecturers to come there and give lectures?—Yes, I think you might do it in that way.

2181. Mr. Mannington has already told us that at first there was much opposition to your work, but that now that opposition is no longer in existence?—That is so. Our correspondence, consequent on applications for advice, is now so great that we will have to take steps shortly to deal with it.

2182. Can you point out what part of the work is, more than another, of most interest to the agriculturists?—I do not think I can name any one part more than another, unless it is the experimental work. Of course, in the summer farmers are very interested in that, and also in the analytical work under the Fertilisers and Feeding Stuffs' Act.

2183. The lectures which are given during the winter bear, I suppose, on the experimental work which has been carried out during the summer?—That is the case.

2184. That of course increases the interest and the attendance at the lectures?—Yes. It is not so in the case of the horticulture and poultry lectures throughout the county. Those are arranged in autumn. We have given 55 lectures at 11 centres on poultry-rearing throughout the county in addition to the agricultural lectures, and 60 lectures on horticulture at 12 different centres.

2185. They are given at various centres throughout the county?—Yes.

2186. (*By Mr. Latham.*) May we ask what was the average attendance at those lectures?—The average attendance at the horticultural lectures was 40. The averages at the poultry lectures were 66, 76, 78, 50, 51, 40, 59, 34, 101, 42, and 54. I may mention that in one case a lecture was given at a village in which there were not

more than 200 inhabitants, and we had 120 people there.

2187. (*By the Chairman.*) You would desire to have a second lecturer on agriculture?—Certainly.

2188. You have only got one now?—Only one.

2189. You have no provision for the training of elementary teachers?—None whatever.

2190. (*By Lord Barnard.*) Would you mind giving the Committee a word or two of information about yourself? How long have you been at the college?—Ten years—five years as lecturer and five years as Principal.

2191. Were you engaged in the teaching of agriculture previously to that?—No, and I am not engaged to teach agriculture now; I teach agricultural chemistry.

2192. Are you personally associated by family ties with farming?—Yes, certainly.

2193. Are most of your staff men who have been brought up on farms—practical men?—Yes, very practical men indeed.

2194. Would you tell us the age at which your students come as a rule?—17, and we have them now up to 29, but most of them are from 14 to, say, 20.

2195. What sort of preparation have they had before they come to you usually?—Very poor indeed.

2196. Some of them from elementary schools?—Yes, and they are very badly prepared indeed—that is our difficulty.

2197. Do many of them come from elementary schools?—Some of them. I cannot state exactly how many, but several do.

2198. Have you many secondary schools in East Sussex?—No, very few.

2199. Would it be an advantage if the boys were better prepared? Could you confer greater benefits upon them?—I do not think we will make very much progress until they are. The boys from elementary schools are so badly prepared that they cannot even follow our lectures, and the lectures are made as simple as possible. Many of them cannot follow them, and some of them cannot take notes of them.

2200. Do you think it would be an advantage if a uniform system of tests were adopted throughout the country for these diplomas or certificates?—It would be a very great advantage indeed.

2201. Are your diplomas always granted on the result of examination?—Not altogether on the examination. In the prospectus we state: "It must be strictly understood that attendance at lectures and practical classes does not qualify for entrance to the diploma examination or the certificate examination. The general work of students will be taken into consideration. Any student may be refused admission to the examinations if in the opinion of the Principal he has not conscientiously followed the prescribed courses. Exception will be taken especially in the case of those students who cram for examination purposes."

2202. Do you ever refuse to admit students to the diploma course?—We have none in for the diploma at present. It is a three years' course, and we only have them for two.

2203. You profess to give instruction in land surveying and the other businesses and professions connected with agriculture?—Yes.

2204. I do not see in the Board of Agriculture report on your college that forestry is mentioned at all. Do you give any instruction in forestry?—None whatever.

2205. There is a very considerable area of woodland in East Sussex, is there not?—Yes, fairly large.

2206. Are a certain number of labouring men employed in the woods?—That I cannot say.

2207. You cannot tell me whether you think it would be an advantage if systematic instruction in forestry were given in the district where woods exist, as they do in East Sussex?—I would not care to answer that question, because I do not pretend to know anything at all about forestry.

2208. (*By Mr. Acland.*) You say that farmers take great interest in the experiments that you do. What sort of experiments interest them most?—I will give you a list of our experiments.

2209. I should like to know those that really are most interesting to farmers?—The experiments on the manuring of meadow land for hay, lucerne experiments, manuring of mangolds, and manuring of potatoes. We have four centres for these experiments.

2210. Is the chief interest displayed in the experiments in manuring?—Yes, chiefly.

2211. Do you think, as interest in your courses develops, you would be able to require a certain standard of secondary education of students with advantage?—We shall be compelled to do so. I do not see how we can go on as we are with the training they have before they come to the college.

2212. You are very severely handicapped by the lack of secondary education in those who come to you?—That is so.

2213. You require something better than is given in the ordinary elementary school?—Certainly, something a great deal better than that.

2214. Have you thought of it as a possible thing to require a standard of elementary education for students?—There is one point here that I should like to draw your attention to. I think that by offering, say, practically free scholarships to sons of farmers who have attended elementary schools and who have reached a certain standard of excellence in those schools, it might do some good; it would make the boys stay at school a little longer.

2215. You are referring to elementary schools?—Yes.

2216. You would not require attendance at a secondary school?—It would be better, but our instruction is so elementary in the first year that if a youth has passed the 7th standard at school he ought to be able to follow it easily. We accept the headmaster's report in lieu of an entrance examination; but in some cases, although the report is satisfactory, the boy is quite hopeless at certain work, which is a great drawback.

2217. You do not regard it as essential to ask for a higher standard of secondary education?—Not at our college, because our work is very elementary in the first year.

2218. Do you think, if it was the habit to send boys to secondary schools until the age of 15 or 16, it would be much easier for you to do your work, because they would be better prepared?—Certainly, and they would do better work also when they come to us.

2219. That is not the habit at present?—No, not at present.

2220. (*By Mr. Lamont.*) I should like to ask you a question with regard to West Sussex, whether you can give the Committee any more information than we have yet received as to why West Sussex has not participated in any way in your college?—I cannot give you any information whatever with regard to that; I do not know.

2221. They have a very much larger area of forest land in West Sussex than you have in East Sussex, and I put it to you whether they would not be more likely to co-operate with you, and more willing to co-operate with you if a definite course of instruction in forestry were given at your college?—It is quite possible that they might, but I do not think it is the lack of instruction in forestry up to the present that has kept them away. I cannot, however, give you any definite reason.

2222. (*By Lord Moreton.*) Do you send any pupils up to the National Diploma Examination?—Yes; I think we have put through altogether seven or eight.

2223. And also to the examinations of the Surveyors' Institute?—Yes.

2224. In your opinion would it be better if what is now called the National Diploma Examination was conducted on a different footing altogether—on such a footing for instance as this, the Board of Agriculture appointing an advisory committee to do the work, that committee consisting of representatives of agricultural societies and other bodies?—I think so. I think it would be better than it is at the present time.

2225. Why do you think so?—That is my opinion.

2226. You formed your opinion on reasons, I suppose, and will you give us your reasons please?—I do not think at the present time the National Diploma is a test at all. It certainly is not a fair test; a student may pass the examination, and may know little or nothing about practical agriculture. I think if the opinion of an instructor in practical agriculture was taken upon the candidate's work it would be better. At present, however, no practical examination is held. A candidate may get all his knowledge from books, and pass the examination without having any practical knowledge whatever. That is my opinion: the examination is not practical enough.

2227. (*By Mr. Latham.*) Are the students confined entirely to the sons of farmers and land agents?—No, there are 18 tradesmen's sons, 11 from the professions, 8 army

Mr. S. A. Woodhead.

8 May, 1907.

Mr. S. A.
Woodhead.

8 May, 1907.

officers, 6 schoolmasters, 5 clergymen, 3 bank managers, and one missionary.

2228. They are, we must suppose, all being more or less taught agriculture?—Yes, and of the past students over 80 per cent. are at present engaged in farming, horticulture, poultry rearing, or land agency (of which 68 per cent. are in actual farming, and 15 per cent. in land agency.)

2229. You say you have a 12 weeks' course for farmers' sons during the winter, and that they are very badly attended?—They are not attended at all.

2230. Will you tell us what that course is?—The course would be one of elementary agriculture, agricultural chemistry, elementary botany, book-keeping, veterinary work, and elementary mensuration chiefly, but they would also be allowed to attend any elementary class in the college.

2231. Have you tried extending it by holding courses in the summer that might be more interesting to them?—No, we have not tried that.

2232. Do not you think it is practically impossible to get them to come to these 12 weeks' courses in the winter?—It is at the time of the year when the farmer's son has least to do.

2233. Chemistry, for instance, is such an absolutely dry thing to start them with that it might disgust them before they got any further?—I think chemistry does in some cases, but not in all.

2234. There is not the slightest doubt that it does disgust some, I am very sorry to say. If the 12 weeks' course in the winter does not attract them in the way in which it is offered to them, would not it be better to have a 24 weeks' course, say, and divide it into two parts of the year?—Our course consists of 12 weeks, part of which is in one year and part in the next year.

2235. But they are both in the winter?—Certainly.

2236. I strongly advise something of the kind being tried. Do you know anything of the shoeing classes that Mr. Mannington has told us about that were such a great failure?—Nothing whatever; that was before my time.

2237. Can you give us any idea how far your instruction in dairying goes?—Each student has 12 lessons in butter-making; we do not take cheese-making at all.

2238. I see you say a six weeks' course in butter making?—Yes, of 12 lessons; they have two per week for six weeks.

2239. What time of the year is that?—That is all the year round; we send the students in batches of six, and they have 12 lessons; then their course in butter-making is completed, and we send another batch.

2240. Are they proficient butter-makers in six weeks?—They ought to be fairly proficient.

2241. And know all the ins and outs of the dairy?—No, I will not say that; that is quite another thing.

2242. Are these stationary dairies?—Yes, on the farm.

2243. Have you ever made any tour through the county with dairy schools?—I think some years ago they had a dairy van round the county, but I do not know why they gave it up.

2244. Was it not a success?—I cannot say; it was before my time.

2245. I see in the first year you do not give any attention to estate management at all, and in the second year you do not teach book-keeping?—That is so.

2246. Can you give us any reason why the book-keeping is left off after the first year?—In one year we consider a youth ought to know enough book-keeping.

2247. A youth who comes at 14 or 15?—Yes.

2248. He would be a very smart youth to learn book-keeping in a year, would he not?—But our students are not all 14; most of them are from 16 to 20, and some of them have done book-keeping before they come to the college.

2249. But these boys that you take at 14 you teach book-keeping to in the first year?—Yes.

2250. Then at the end of the first year you do not go on with it?—That is so.

2251. Do you not think that the very time you stop is just the time you ought to go on?—It depends upon the student.

2252. (By Dr. Somerville.) I think you passed through the course of instruction for the degree in the college at Newcastle?—Yes.

2253. And graduated at the University of Durham?—Yes.

2254. You came on, if I remember rightly, did you not, with a county scholarship?—That is so.

2255. I suppose we may take it that if you had not been assisted by a county scholarship the probability is you would never have gone through an agricultural course to the extent which you did, and possibly that you would not have been occupying your present position to-day?—That is so to some extent. I certainly might not have gone in for agriculture; I think I might have gone in for medicine.

2256. I suppose you went in for agriculture partly as the result of accidental circumstances, namely, the obtaining of this particular scholarship?—Well, I had thought about taking up agriculture, having been in the country all my life; but I had not really made up my mind until I got the scholarship. There were several scholarships offered, and I got the agricultural one, so I took it.

2257. In that particular case you came with a scholarship to an institution that was not in the county that had granted the scholarship?—Yes.

2258. For this certificate that is given by your college have you outside examiners?—No, none whatever.

2259. Is the examination entirely conducted by the members of the staff?—Yes.

2260. Will that be the case also when you grant a diploma?—Yes, as far as I am aware at the present time.

2261. Is this arrangement the result of insufficiency of funds to meet the fees of additional outside examiners, or is it the result of your conviction that the system is a good one?—I do not think it is a question of money at all.

2262. Are you satisfied that the results of an examination conducted entirely by the teachers of the candidates are perfectly unbiassed?—They ought to be; they are in my own case, but I think it would be better to have outside examiners; I admit that point.

2263. But still you have decided not to have them. Do you keep in touch with students who have passed through your college?—Some; not all.

2264. You have nothing in the nature of an old students' association?—Nothing whatever.

2265. Do you not think that good work lies before such an association?—Yes, I think so.

2266. You perhaps have not seriously considered the matter?—No, I have not thought of it.

2267. Who arranges these field demonstrations that are a feature of your work?—The lecturer on agriculture draws up the scheme. This is presented to the Agricultural Sub-Committee. If approved, the lecturer carries out the work, my duty being to see the Committee's instructions are carried out.

2268. He frames the details?—He does.

2269. You do not?—No, I do not.

2270. (By Mr. Medd.) I should like to ask you a question in reference to the short courses for farmers' sons. Have you had any pupils for those?—None whatever.

2271. Do you attribute the cause of that to the want of accommodation, or to the indifference or hostility of the farmers?—I do not think it is the want of accommodation.

2272. Is it purely prejudice?—I think so.

2273. In regard to the age of admission, the minimum age of your students is 14?—Yes.

2274. What would be the maximum age of those you have now?—29; but we have only one at 29, and the others are below 21.

2275. You have pupils ranging from 14 years of age up to 29?—Yes.

2276. The total number of your pupils is 36?—Yes.

2277. Those pupils ranging from 14 to 29 must vary very considerably in attainments and qualifications?—Yes.

2278. Do you not find the classification of them extremely difficult?—Extremely difficult.

2279. Must not this difference in age and attainment entail considerable additional expense both in regard to staffing and the arrangement of the classes, and so forth?—Yes, I think it does to some extent, but not so much in staffing as in arrangement of classes.

2280. It probably does?—Yes, certainly, to some extent it must.

Mr. S. A.
Woodhead.

8 May, 1907.

2281. Because in looking at the Report the total expenditure upon the college as compared with the number of pupils is high?—Yes, but the cost of the college includes all county work.

2282. Have you met with any institution of your size attempting to cater for boys of 14 and at the same time for men of 29?—Yes, I think there is another institution, or there was one in Cheshire, which does.

2283. You refer to the College at Holmes Chapel?—Yes, it used to be so, I think, with them.

2284. I think you will find that their pupils are now from 14 to 17 or 18?—Yes. We used to admit at 16, but we lowered the age to 14 in order to get the youths when they came out of the elementary schools.

2285. With regard to the economy of time and economy of money would not your college be more likely to improve in working if it confined itself to students from 14 to 16 or 18 or to students of above 18?—You mean admit only at a certain age or between two ages?

2286. Yes. Confine either the admission to pupils of 14 up to 16, or from 18 onwards?—Yes, and it would certainly be easier to work, too.

2287. You, in other words, are attempting now to combine intermediate and advanced agricultural instruction?—I cannot call our instruction advanced.

2288. Yet you aim at the National Diploma as a sort of *terminus ad quem*, do you not?—That is only in the case of those students who are specially coached for it.

2289. Then do you give a special preparation for a few selected students?—Yes, in the evening.

2290. I cannot help thinking that every institution must suffer in organisation and in efficiency when it attempts to provide for pupils of such very varying ages and attainments. You must be conscious of that yourself as principal?—Yes, I am.

2291. I am sure you must be, and if you could confine yourself more specifically to definite ages, probably the general work of the college would be improved?—It ought to be.

2292. You do not as yet provide any facilities for the training of elementary teachers, but I suppose the college could, as elsewhere, afford facilities?—I cannot say anything about that as yet.

2293. It has not, perhaps, been considered?—No.

2294. Do any members of your staff give assistance outside in the county otherwise than by way of lectures. Have they done anything hitherto for continuation schools?—Nothing in that line. Of course, we have answered letters asking for advice, and so on.

2295. (By Mr. Middleton.) Your usual length of course is two years?—Yes.

2296. I may take it with your 36 students you will have an entry of perhaps 18 or 20 fresh students each year?—Yes.

2297. Not many drop off in the second year?—Occasionally, but we soon fill up again.

2298. You are not seriously troubled with dropping away in the courses?—No, I cannot say we are.

2299. You have been doing a great many analyses?—Yes.

2300. Are you an analyst under the Sale of Food and Drugs Act for the county?—Yes, and under the Fertilisers and Feeding Stuffs Act.

2301. In sending your reports to the farmers do you give them any advice as well?—Yes; not on the official report, but privately by letter.

2302. About how many samples do you have?—Last quarter I had 20 under the Fertilisers and Feeding Stuffs Act, but under the Food and Drugs Act I had 120.

2303. (By Lord Barnard.) Are you the official analyst under the Fertilisers and Feeding Stuffs Act for the county?—I am.

2304. (By Mr. Davies.) May I ask what the staff consists of besides yourself?—A lecturer on agriculture; a lecturer on mensuration, book-keeping and estate management; on horticulture; on veterinary hygiene; on poultry farming; an instructor in carpentry, and one in smith's work; a laboratory assistant; and an instructor in dairy work.

2305. How many is that?—Nine.

2306. Of the 36 students how many of them come under the three years' course?—None at the present time. We have no diploma students. We have one student who

has been with us for three years, but he is really waiting until he is old enough to take the Surveyors' Institution examination.

2307. For the two years' course how many have you?—About half.

2308. About 18 that is?—Yes.

2309. Are they with you all the year round, from one year's end to the other practically, except their vacations? Certainly.

2310. There are no students at all in the twelve weeks' course?—None whatever.

2311. So that all your energies are directed towards getting the two years' student ready for the diploma?—For the college certificate if they take it, but many of them do not take the college certificate; they take agriculture, horticulture or poultry farming without taking the certificate.

2312. But they have to pass some examination before they leave the college, do they not?—No; they are not compelled to do so.

2313. They can come and stay there without passing any examination?—Yes, many of them do without taking the final examination for certificate; but they must take the examinations at the end of each term.

2314. I understood that there were a certain number of scholarships awarded by the County Council?—Yes.

2315. How many of them are there?—Five of £10 at the present time, and I think we have four students with scholarships of £30, if I remember right. I have not the exact numbers with me.

2316. So that about half your students get scholarships?—No, not half of them. Perhaps you mean from Sussex?

2317. Yes.—There are 22 from Sussex at the present time.

2318. If you have nine scholarships and 18 students coming each year it would be half?—Yes, that is so; but we only admit nine scholarship students during the two years.

2319. You were complaining just now that the type of student who comes to you is very backward when he arrives. I understand you have an examination before the scholarships are awarded?—Certainly. I am not complaining of the scholarship students at all, only of those who come in without scholarships.

2320. The scholarship students are able to appreciate your lectures?—Certainly.

2321. Do not the scholarship students have to pass an examination before they leave the college?—Yes, they have.

2322. They are on an entirely different footing from the others?—An entirely different footing altogether.

2323. The students from Sussex pay £50 a year, and the students from outside £70?—£50 for the students from Sussex, and £75 for those outside the county.

2324. Are those fees sufficient with the grant you get from the Board of Agriculture to maintain the college?—No. The students from without the county pay for themselves quite well, but the £50 paid by county students will, I think, just cover expenses.

2325. Who makes up the deficit?—The County Council.

2326. How much is that?—I do not keep the books, so I cannot give you that very definitely, but I think it is about £1,200 a year.

2327. You do not do any dairy work in the college, do you?—Only a six weeks' course for dairy students. All students attending the college and taking agriculture must take dairy instruction for six weeks—twelve lessons.

2328. Who gives the lectures in dairying?—We have a dairy instructress; she is really the farm bailiff's wife.

2329. She is only employed for six weeks in the year?—No, she is employed the whole year, because we send them in batches of six to the dairy—they attend every week for six weeks, taking generally two lessons per week.

2330. I understood there were field trials in addition to the lectures carried on in the county?—Yes.

2331. Those are carried on by the college?—Yes.

2332. Who pays for that work?—The County Council.

2333. That is included in the £1,200?—Yes, and the lectures outside as well—they are all included.

2334. Do you consider the student before he comes to your college should have had some practical experience on a farm?—It would be better if he had, I think.

2335. But you do not make that an absolute rule?—No.

Mr. WILLIAM ASHCROFT, Chairman of the Joint Committee of the British Dairy Institute, Reading, called and examined.

Mr. W. Ashcroft. 2336. (By the Chairman.) You are Chairman of the Dairy Institute Joint Committee?—Yes.

8 May, 1907. 2337. And Examiner at the Institute for the British Dairy Farmers' Association?—I am.

2338. Perhaps you will say something as to the condition of dairy education twenty-five years ago?—I should say that twenty-five years ago it was quite impossible, or nearly impossible, to get any information on dairying from any institute; there were nothing like the number of institutes that there are at the present day. It was extremely difficult to get a properly qualified dairymaid, and no one, practically speaking, seemed to know anything about butter-making, and of course cheese-making was only in a few hands. I grafted dairying on to my own mixed farm about thirty years ago. I got a dairymaid from Devonshire, and I think for a good long time she systematically overchurned the butter that was made. Mr. Jenkins, of the Royal, was the only possible instructor at that time, and he used to advocate the need of churning the butter after the French method, and consequently, following his advice, I changed the system in my dairy and I should think for a very considerable time my butter was consistently underchurned, and one fault was about as bad as the other. Then seeing butter made at a show or two by churn makers, I thought it wise to change my method. I changed it to a really proper way of making butter, and the thing was put right. That is what happened in those days, but if the thing happened nowadays I should not have the slightest difficulty in acquiring information or getting a dairymaid. That simply shows the difference between what you can learn now and what you could learn then.

2339. The supply of dairy education at that time was practically nil?—That is what I should say.

2340. And, from your personal experience you state that there was a very great need?—A very great need. You could not go anywhere to learn, and now you can go nearly all over the country and find an Institute.

2341. The British Dairy Institute was the first of its kind established?—I believe I am right in saying that the Institute founded at Aylesbury by the British Dairy Farmers was the first Institute that was founded. It was started, I think, in 1888—I am not quite sure if the travelling schools of the Bath and West slightly preceded that, or whether they did not, but they came into existence pretty much about the same time, I think.

2342. Was there a good supply of the first lot of students?—No, I cannot say that there was a good supply. I was speaking to our Secretary the other day about the first supply of students—he, of course, was Secretary of the Institute then—and he told me that Mr. Tisdale, the chairman of the British Dairy Farmers at the time, asked him to try and find students—if he knew any likely people he could persuade to come to the Institute, he was to try and get them. There was a good deal of prejudice amongst the farmers against the Dairy Institute to start with, and students did not come freely. I think during the eight years we were at Aylesbury the students would average from 40 to 50 in the course of the year. But that prejudice has died down. It has been killed simply because farmers have learnt to appreciate the teaching and to appreciate the people we turn out.

2343. Gradually the advantages are getting better known?—Yes, and I should say there is no prejudice whatever against Dairy Institutions now.

2344. Dairy Institutions are scattered all over the country now?—Well, that is rather a large statement, but they are practically scattered all over the country. There is one in the Midland counties, one in the North, one in Bangor and so on, and they are fairly equidistant from one another, situated to command a radius.

2345. You contrast the numbers in the first eight years of Aylesbury with the present number?—Yes, I contrast the number during the first eight years of Aylesbury, which was, I think, about 50, with the average of the students for the years that we have been at Reading, which, I think, is 100, or slightly over. You must remember that these figures must not be contrasted one against the other, because when we were at Aylesbury we were almost the only Institute of the kind, and now when you turn to the Reading figures you must remember there are half-a-dozen schools elsewhere to take students who might

otherwise go to Reading. So that you must contrast 50 against 100 plus the students that are going elsewhere, who might otherwise come to us.

2346. The Institution was transferred from Aylesbury to Reading?—Yes.

2347. Why did that happen?—We transferred to Reading largely with the idea of getting a better scientific education close to hand, and marrying ourselves to a scientific institution, so that we should be able to give better and more thorough scientific instruction, and at less cost, although I do not think that the less cost has been carried out.

2348. The expense of working was increased because of the extra cost of milk at Reading?—Yes. Of course, by moving to a centre like Reading we favoured the students on the main lines. From the point of view of the students it is an advantage for us to be at a centre like that, but from the point of view of a Dairy Institute where you have to buy your milk, you always have to buy it, of course, at a different figure in a place like that from what you would buy it at if you were situated right away out in the country. It is not quite a fair comparison in one way, because it is 10 years ago, but we now pay 2d. a gallon more for our milk than we did at Aylesbury, but if we moved back to Aylesbury, we should be able to get our milk at much less than we get it for at Reading, because the people who supply us with fresh milk at Reading have the option, if they like, of selling in the town. So that by moving to Reading we work at an increased expense for our milk, and we always make a loss on our milk in the winter, although in the summer we can make it pay. In the winter, however, we make a loss, and to such an extent that a loss is made on the whole year.

2349. You have, roughly speaking, three classes of students. Perhaps you will explain that?—I do not know that I can give you exactly the percentages. I generally catechise students as to where they come from, and what they hope to do—possibly Mr. Benson will be able to give you more definite figures, but I find a good many are either the sons or the daughters, or the wives, of small farmers, or possibly, some are on their own in a small way, who come at some little sacrifice—a considerable sacrifice, very often—to improve themselves, and they mean to go back to their farms, or to the work they have left to come to the college. There is a very large section of students of that description, and they are a class of students that ought to be catered for. They are a large section of the students who go through the Dairy Institute. Then there is a better class of students, who come with the object of qualifying themselves as dairy instructors, and taking up positions as teachers. Then one finds some who come really to gain knowledge sufficient for factory work, or to take up creamery posts, and so on. I should say that the first class is the main section of the students, and we look upon it as one of the most important sections, and the section we ought to push and study as much as possible. As an alternative method, you may divide them into two classes, as I have said further on, into students who come just to learn simply how to manipulate butter, or to manipulate cheese, in as short a time as possible, and who pick up their scientific knowledge in a haphazard sort of fashion in the short time that they give. That section, from what I am told, is rather changing, and we are getting a better class of students, who come with the idea of getting a scientific knowledge of milk and milk analysis.

2350. Those students come better prepared?—Yes, they come better prepared, and they are better students. Those who have come simply to learn how to manipulate butter and cheese I should call County Council students, who have come, perhaps, from a travelling butter or cheese dairy, and have come just to see what they can do in a little while. But we have rather fewer of those now than we used to have, and it is changing more into a class of students who really desire to go scientifically into the whole question of milk and butter and cheese. Then, of course, we have a very considerable number of students who come, say, for three months or for six months, and who mean to learn as much as they possibly can of the whole science of dairying, chemistry and bacteriology, as well as learning the practical manipulation of butter and cheese.

2351. Some of your students attend the courses at the College?—Some of them do. We have a certain percentage of students who are students of the College—of course,

always agricultural students. I think it is quite the exception for any student of the College but an agricultural one to come and attend classes in the Institute; but the Principal of the Institute informs me that he has often recommended people who wish to come to the Institute to go and take the agricultural course first at college, and then come into the Institute either from there or afterwards. Of course, as you will naturally see, it would work to their advantage to have an agricultural course preceding the Dairy Institute course. We cannot profess to teach agriculture in the Dairy Institute. The College also sends some of its agricultural students to the Dairy Institute; they are students of the College who come to the dairy. It is difficult to say what the percentage is, but I should say possibly 10 or 15 per cent. may be students of the College. I am speaking without exact figures, and I can only give you a rough idea.

2352. You have made arrangements with the College to facilitate that?—Yes.

2353. I suppose there is always an increasing demand for your students to obtain situations in creamery and factory works?—I should hardly say an increasing demand. You see the demand is limited for creamery and factory work, and I should hardly say there is an increasing demand.

2354. Creameries and factories are increasing throughout the country, are they not?—Yes, they are to a certain extent; but whether the demand for managers or for people qualified to take posts in them is on the increase, or whether we feel the demand, I should not like to say, but it may be so.

2355. With regard to the finances of the Institute, would you give the Committee some idea of the expenditure and sources of revenue?—Of course, on the credit side there are the fees paid by the students. Those fees are set at a figure to try and get as many students as we can, and they do not, of course, cover the expenses by any means, but we keep them as low as we can, and I think it would be better in a way if we could put them lower; it would bring us more students, and throw our education wider, but we cannot at the moment put them lower. Then there is a grant from the Board of Agriculture of £300. That does not cover the deficit, and the Reading College and the British Dairy Farmers' Association, being partners in the Institute now since we moved to Reading, have agreed to make up the deficit, and so at the end of the year, or during the year, both those bodies, the British Dairy Farmers' Association and the College, are drawn upon. I can hardly give you the figures exactly but we are drawn upon as a rule from £100 to £150 a year, each. That is what we have to pay. This last year, I think, from having paid only £100 for the year before, we shall have to pay about £150.

2356. Are your students resident students?—Yes.

2357. Have you a hostel for them?—No, there is no hostel for them. They reside in lodgings in the town.

2358. There is no difficulty with regard to that?—No.

2359. (*By Lord Moreton.*) They reside in Reading and in the surrounding villages, do they not?—There are villages round Reading.

2360. They reside not only in the town of Reading, but also in the villages round?—I do not know about the villages outside. I think most of the students live in the town of Reading; but there may be, of course, students who live outside.

2361. (*By Mr. Latham.*) I thought they had to live in lodgings under the care of the college?—I am not quite certain whether they are allowed to live outside the town if they can. The Principal now informs me that students under a certain age must live in Reading, but students over a certain age can go outside.

2362. (*By the Chairman.*) Where do students under a certain age reside?—They reside in Reading.

2363. (*By Mr. Latham.*) In a college hostel?—Yes. I am afraid I have not made that point quite clear—I was not quite clear about it myself—but I know that students under a certain age are under a certain amount of supervision by the college authorities.

2364. (*By the Chairman.*) Your students are drawn from a class who find it difficult to pay high fees, and low fees are a necessity?—That is the opinion I have formed from the class of man whom I have talked with when I have been examining there. I have come to that opinion, that they cannot afford to pay high fees, and they cannot afford to come for long. They come for as long as they can, and to them, in many cases, it is a considerable sacrifice to come at all.

2365. Does the county give you any contribution?—No, we have nothing from them. We used to have some scholarships, but we have not had any lately.

2366. How is the governing body of the Institute constituted?—The Institute is managed by a joint committee, appointed jointly by the members of the Dairy Farmers' Association and by the College. There are six members of each; six from the Dairy Farmers' Association and six from the College. We form a joint committee, and they manage the finances and everything connected with the appointments of the College.

2367. The Institution is inspected by inspectors from the Board of Agriculture?—Yes.

2368. You grant diplomas and certificates?—The diplomas and certificates that I allude to are the diplomas and certificates granted by the British Dairy Farmers' Association; they have granted those ever since they started the Dairy Institute at Aylesbury, and they continued to do so when they moved to Reading, and they continue their own examinations, which are, of course, held independently of the College. The College also hold dairy examinations, and, of course, students of the Dairy Institute go in for those examinations, but the diplomas and certificates to which I referred are those given by the British Dairy Farmers' Association.

2369. The diploma is higher than a certificate?—Yes. They give three classes of certificate. They give a diploma, which is the highest, in which they demand not only a fair knowledge of butter and cheese-making and the science of dairying, but also a fair knowledge of the science of agriculture. That is the highest. That involves a knowledge of agriculture. Then they give a teacher's certificate, in which they do not insist so much upon a knowledge of agriculture, but they insist that the person should be ready to give and capable of instructing—a person with an aptitude for giving instruction—both in the scientific and in the practical side of butter and cheese-making. That is the teacher's certificate; that is the second. Then they give butter-making certificates, or cheese-making certificates, which is the third. For a butter-making certificate, or a cheese-making certificate, the candidate must be able to make butter or cheese properly and well, and also be able to do a moderate scientific paper on the practice of dairying. They are asked a few questions on agriculture, but the principal questions are with regard to dairying, as to milking and butter and cheese-making, and so on; by no means a difficult scientific paper. They can take both butter and cheese-making. Of course, it includes a certain amount of practical work.

2370. How long is the course before you can take a diploma?—I do not think any student could properly take a diploma under about a year and a half. If he comes to the college with some practical work on the farm behind him, and then works hard for six months or a year, of course he might earn a diploma; but if he comes with no practical knowledge whatever, I very much doubt if he would take the diploma in a year, or even longer. I think he would fail for want of practical knowledge.

2371. How long would it take before he could get a certificate?—To take a certificate for butter and cheese a person ought to be able to do it, say, in three months or six months, that is if he has had a good school education, and if he is not a dolt in picking up the scientific education which he has to gather. If you send a man that can hardly read or write it is possible you would not get him to take a certificate under two years.

2372. How long does the teacher's certificate take?—The people who come to us for a teacher's certificate have, as a rule, gone through the butter and cheese-making certificates to start with. They have gone through their six months' course, and then they go on, or possibly they go away and work on a farm or get a minor engagement somewhere, and then they come back and work for a teacher's certificate. What they want is confidence in what they know, and they must have confidence in themselves, and that is not a thing that is acquired in a hurry.

2373. They have a better scientific knowledge, I suppose?—Yes, I do not say they are advanced scientific students, because they are not, but so far as they know it they know it properly.

2374. Do they get as much science as the diploma students?—Yes, I should say they do. As a general rule the teacher students know as much of the science of dairying as the diploma students.

2375. Is there a factory attached to the dairy?—No, there is no factory attached to it.

Mr. W. Ashcroft.

8 May, 1907.

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2376. And no farm?—There is a farm attached to the College.

2377. Not attached to the Dairy Institute?—No, not to the Institute. The college has had a farm within the last year or so, but before that they had no farm connected with the college, and all our milk had to be bought from a farm in the neighbourhood. Now a small quantity of our milk comes from the college farm, and we pay them for it on the same scale as our principal milk supply.

2378. You have all the appliances for making butter and cheese?—Yes, for butter-making and for the various classes of hard and soft cheeses, Cheddar or Stilton, or Cheshire or Wensleydale, and so on.

2379. Are there factories in the neighbourhood to which you can take your students?—No, I do not think there are any cheese-making factories in the immediate neighbourhood, and even if there were I do not think there is any necessity for a student to attend those because I think a student would do better to keep to his own cheese tub and his own churn, rather than running about to factories to look on.

2380. Your opinion is that the appliances you have for the purposes of instruction are superior to what you would be able to teach them with in a factory?—I will not say they are superior, but they are more diverse and equally as good, and they are to my mind quite sufficient.

2381. So that a student having gone through your course is quite at home when he gets into a factory?—Quite so. If a student comes to us for a certain course of cheese instruction, he is perfectly competent when he goes back to his farm, if he has applied himself while he has been with us to take up that work and go on with it.

2382. He would be competent to manage a factory would he?—That, of course, is rather a big question to answer, that would depend upon the student—rather more on the student than on his education, I think. But I think a student with fair brains could perfectly well qualify himself to take up managing work, that is, if he has got the gift of organising. A student may learn how to make cheese, but he may not be anything of an organiser or a manager when thrown on his own.

2383. (*By Lord Barnard.*) I do not think you have told the Chairman in what capacity you attend here. You come here as Chairman of the British Dairy Institute, I understand?—I happen to be at present Chairman of the Joint Committee.

2384. To whom does the Institute belong?—It belonged originally, when it was at Aylesbury, to the British Dairy Farmers' Association, but now it belongs to the British Dairy Farmers' Association and the Reading College, they are partners in it. I can hardly go into the exact particulars but that is practically how it is—they are partners in it.

2385. That is quite sufficient for my purposes. Is it a freehold property?—It belongs to the Reading College, who are, at present, arranging to sell it and build a new Institute near the present College buildings; but there is some dispute about the sale, and it is, at present, in abeyance. The Dairy Institute pays rent to the College.

2386. Is the constitution of the managing body in writing in any way?—Yes, there is a legal agreement between the British Dairy Farmers' Association and the Reading College in which all the terms are set out, including the terms of dissolution and everything of the kind. That has just been renewed for another year owing to this dispute about the sale of the present Institute. If the new Institute had been started we should have entered on a fresh agreement.

2387. You represent the British Dairy Farmers' Association on the committee?—I represent the British Dairy Farmers' Association on the Joint Committee.

2388. You are practically a dairy farmer yourself?—I am.

2389. You speak with a great deal of scientific experience and practical experience of dairy farming?—Yes, an experience extending over many years, but I put the practical experience first.

2390. I suppose the Principal will be able to tell us better as to the age which the students come to you?—Yes.

2391. I see the governing body includes representatives of the British Dairy Farmers' Association and of the Reading College. Does it include any of the teachers?—Only in this way, that ever since we have been at Reading the Principal of the College and the gentleman at the head of the agricultural department have always been members

of the Joint Committee, so that we have always had two teachers on the Joint Committee; and so we have now.

2392. Do they act as what is sometimes called advisory members, or are they full members with votes?—They are full members, they are elected members on the college side.

2393. You keep entirely separate accounts of your Dairy Institute, I suppose?—Yes, the secretary of the Institute is the secretary of the British Dairy Farmers' Association, but it is quite a separate account, and the accounts are submitted to the British Dairy Farmers' Association, and to the College for their separate contributions.

2394. Am I right when I say that the Institute was the creation of the British Dairy Farmers' Association?—Yes, I think you are perfectly right in saying that.

2395. Is the British Dairy Farmers' Association a modern institution or has it existed for some time?—It has existed, I think, since about 1882, but I am not quite sure.

2396. Is it an incorporated society or anything of that description?—Yes, I think it is.

2397. You have told the Chairman that you consider a great advance has been made in the promotion of technical knowledge in dairying?—Yes.

2398. Can you, speaking from your own knowledge, tell us whether the market price of dairy produce has increased of late years?—It varies so. If you ask me about cheese, I suppose cheese is better than it has been, but if you ask me about butter, if you want to compare the price of butter now with the price of butter 25 or 30 years ago, I should say that it is lower. I can give you a practical instance: when I began to make butter 30 years ago, I had no difficulty in getting from private consumers 1s. 8d. a pound, all the year round, but as time progressed I found plenty of competitors came along and the price had to go down, and I daresay now I should find lower prices still.

2399. Do you think the Institute has been of advantage to the dairy industry of the country generally?—Yes, I think so decidedly.

2400. From a national point of view?—Yes, because the country generally get their dairy produce of a much better and cheaper quality.

2401. Can you tell me whether the Board of Agriculture had any influence upon your removal from Aylesbury?—Yes, I think when we were at Aylesbury, we were told that unless we moved and married ourselves to a scientific institution our grant would be in jeopardy. I think that was one hint that was conveyed to us.

2402. You are quite satisfied with the control of the Board of Agriculture, and have found it helpful?—Oh yes.

2403. You have already told us, in answer to a question of the Chairman, about the students' fees?—Yes, they are on a sliding scale, you may say. The fees for a butter-making student are 10s. per week, for a cheese-making student £1 a week, that is if they only come for one or two or three weeks, but if they care to come for three months it is £10; if they care to come for six months they can come for £16, so that the longer they stop the cheaper they may come.

2404. In your accounts do you credit the college with the amount expended by the college for any instruction given to your students; and *vice versa*?—The British Dairy Farmers' Association pays to the College £100 a year for scientific instruction, that is what the Association itself pays the College. It is a little intricate, perhaps to understand, but they pay as part and parcel of the agreement.

2405. Do you think the operations of your Institute could, in the interests of the public, usefully be extended?—Yes, I think they could, most certainly. I think we should do better if we could have more laboratory work—at least a better supply of scientific work so as to be able to do more research work apart from what the College can supply, for that is rather full up, as you may say. I think on the one hand we ought to be able to do more in that way, and, of course, with more help behind us we could lower our fees and we could gather in more students. That, of course, is a supposition, but I think it would work so.

2406. Is there any other source except the Government to which you could look for increased revenue?—No; we have tried, and we have almost given up trying

to draw the County Councils. We used to get some scholarships, but I think we have given up even asking them now.

2407. I think you will agree with me in a statement I have made on more than one occasion—that no great financial support can be expected from agriculturists themselves?—No, I am afraid that is so.

2408. The agricultural industry in this country is not sufficiently flourishing?—No.

2409. Not like mining and other industries with which we are acquainted?—No.

2410. I think I interpret you rightly when I say that you are of opinion, from your personal knowledge and experience, that this Institute has been of great public service?—That I say without any hesitation whatever.

2411. (*By Lord Moreton.*) I believe on several occasions the examination for the National Diploma degree has been held at Reading?—Yes, of the Royal Agricultural Society.

2412. Have you ever been present at any of those examinations?—No, not personally. I have usually been examining myself when those have come on.

2413. Do many of your students go up for them?—Yes, when the examination of the Royal was in the autumn there was always a certain number of the students taking both—who went in for our diploma and teacher's certificate, and also for the diploma of the Royal Agricultural Society as well.

2414. Have you been satisfied with that examination?—Sometimes, yes; sometimes decidedly no.

2415. I do not mean as regards the percentage of pupils that pass, but whether you think it is a thoroughly practical examination?—You mean as regards the Royal Examination?

2416. Yes.—So far as I can judge, yes. We used to take a good deal of trouble to prepare for them, and we had to go to considerable expense—of course we were paid for it—to find extra plant for them, and we were quite satisfied as to how the examination was conducted.

2417. There is another question. I should like to ask you if you think it is a fair one. Do you consider pupils examined at the place where they have been taught have an advantage over pupils coming from a distance? I mean only as regards dairy work, of course. I do not know whether I have put it clearly enough. Let me put it in this way: should you consider that pupils at Reading had a slight advantage in an examination held at Reading, over a pupil coming from Derby to that examination?—You mean going in for the Royal examination?

2418. Yes, or any other dairy examination. I do not confine you to the Royal.—I do not think so. I have noticed students that have come under my observation, who have come from elsewhere, perhaps from Derby or from some other place, to Reading, to the examinations, and I do not think they are under any disadvantage. It very much depends upon the students themselves, although I must say, in answer to your question, that I have had the remark made to me that students going away from Reading to another college were under a disadvantage. That remark has been made to me, but I cannot say that it has struck me in examining pupils from elsewhere.

2419. You will not be surprised to hear that there is an opinion amongst certain people that a pupil has an advantage in being examined in the place of his tuition?—It has never struck me as being so in the various students I have examined, but I have had a remark, which will bear out yours, made to me, that students going from Reading to Derby went at a disadvantage. So that it comes to that in another way.

2420. (*By Mr. Lamont.*) I should like to ask you to repeat what you said as to the fees in answer to Lord Barnard, because I did not quite catch what you said?—The fees for a butter-making student are 10s. a week; for a cheese-making student, £1 a week, that is if they come for a short time; if they come for a three months' course, it is £10, and if they come for a six months' course, they can come for £16.

2421. Is that inclusive?—Yes, that is inclusive. Of course, the three months and the six months includes both butter and cheese, but the 10s. a week fee is only for butter-making, and the £1 a week fee is only for cheese.

2422. That is not, of course, inclusive of board and lodging?—No, those are the fees payable to the Dairy Institute.

2423. Could you give us any idea of what it costs a

student to live in Reading, taking lodgings and finding himself in food. I do not want to press you, but I think it would be of value if you ascertained that?—If I might appeal to the Principal I might be able to answer you definitely, but I should think that a student could find board and lodging in Reading for £1 a week.

2424. (*By Mr. Latham.*) I do not think it would be as much as that?—Perhaps not, but it seemed to me that it would be £1 a week, but possibly Mr. Benson can give you definite information about that.

2425. (*By Mr. Lamont.*) There is a farm attached to the Dairy Institute, is there not?—No, there is no farm attached to the Dairy Institute; there is a farm now attached to the College, which is under the control of the head of the agricultural department, which is intimately connected with the Institute.

2426. What is the acreage of that farm?—That I do not know, it is only a recent acquisition.

2427. (*By Lord Moreton.*) 200 acres is it not?—It is a small farm.

2428. (*By Mr. Lamont.*) How many cows do you keep?—I could not tell you, it has only just started, and I have never seen the farm myself.

(*Mr. Latham.*) It is not quite 20 cows.

2429. (*Mr. Lamont.*) Do you not think it would be of advantage if there were a creamery in connection with the Dairy Institute?—No, I cannot quite see the advantage myself from an educational point of view. A student comes to the Institute for a certain time, and if he is a conscientious student he has quite as much as he can get through if he wants to learn the proper manipulations of the different cheeses, and to learn what science he can get hold of in six months. I think his time would be quite as advantageously occupied in the Institute as by running about watching operations in creamery factories.

2430. Surely he loses what value there may be in seeing the work done by the use of pasteurisers or cream separators and other scientific instruments?—He learns the principle of the things, and I think when a man has learnt the principle of things, all about temperatures and so on, and what is to be done, once he is fairly grounded in the science I do not think there is any difficulty in applying that science.

2431. Do you not think that the greatest advance in the dairy industry of this country is to be looked for in the greater use, and the greater convenience and benefit to be had from the use of such instruments as I have mentioned?—No doubt pasteurising or sterilising milk is coming to the fore, and no doubt it will develop greatly.

2432. When I was in Denmark not very long ago, I went over the works of Burmeister & Wain, who are amongst the largest makers of scientific dairy instruments in the world, and they told me they were establishing a depot in Dublin because of the large demand that there was in Ireland for their instruments. I said "Are not you doing anything for England and Scotland," and they said, "No, we have a small branch in London for dealing with the Colonies and abroad, but that is all," and I asked then whether they were not proposing to establish a depot for England and Scotland, and they said there was not likely to be any demand in England and Scotland for scientific dairying, and that they were not afraid of British competition. Can you tell me what is the reason for that?—There is no demand for them in the country. It is coming in the large towns—you can hardly say it has come yet—and no doubt when it does come, we will try and develop it in the same way, and by teaching and providing demonstrations of what is needed.

2433. You think you must wait for the demand?—I do not think it is pushed upon us at present: it possibly will be.

2434. Then to come to the work that you are doing in the dairy; you are paying attention, I suppose, to the milk yield of your cows?—Yes, everything of that kind.

2435. A careful record is kept of that, I suppose?—Well, there are no cows to keep records of, but the advantages of keeping records and the need of keeping records, and so on, is, of course, taught, but if you have not got any cows you can hardly keep records of them, can you?

(*Mr. Latham.*) I should like to say that I think the records of the quality of the milk is kept better there, possibly, than any other place in England.

2436. (*By Mr. Middleton.*) You have an experience in general agriculture as well as dairying, I suppose?—Yes.

Mr. W. Ashcroft.
8 May, 1907.

Mr. W. Ashcroft.

8 May, 1907.

2437. You, I understand, are steward in charge of experiments for the Bath and West of England Society?—Yes.

2438. You move about a great deal in the South of England, and are in contact with farmers throughout the South of England?—Yes.

2439. So that you are able from personal observation to testify to the improvement that has taken place in the teaching of dairy subjects during the last 30 years?—Yes, certainly. I can say that, and I am also bound to say that there is room for still further teaching yet.

2440. I was just going to come to that. You have indicated the advance that has been made, and now I was going to ask you what further requirements are necessary?—Simply in matters of dairy education; there is still room for more advanced knowledge, going a step higher in all manufactures, both in manufactures of cheese and in manufactures of butter.

2441. Have you a sufficient supply of institutions now? Does the institute that you represent here sufficiently serve the South of England?—I should say, looking at the number of institutions there are dotted over the country, that if they are properly supported there is a sufficient supply. I do not know that it is fair to put Reading to me as a particular instance, but I should say there are quite enough, and that a multiplication of them would not be of advantage to the dairy industry. I think, however, that they should be better equipped even than they are.

2442. You prefer to strengthen existing institutions rather than to establish additional institutions?—That is what I mean, yes.

2443. (*By Mr. Latham.*) I feel a little diffident about questioning this witness, as he is one of my colleagues on the Bath and West of England. I did not understand what you meant by saying the cheese making now was in few hands?—I think you have misunderstood me. I said that 25 or 30 years ago it was extremely difficult to get any definite information on butter making, and that the cheese making then was only in a few hands. You might find here and there good cheese-makers, but they were only a few in number, and that you would hardly find any person who was competent to give you instruction in butter making at that time at all.

2444. I suppose when you started at Aylesbury it was in a very primitive way?—Yes, it was in a very primitive way. The surroundings were very small. We were the pioneers of it, and we only had one purse to draw upon; but still, although it was in a primitive way, we did at the time do extremely good work.

2445. Now you have made very great strides by coming to Reading?—Yes, and now we are better equipped. In the first place, we had all our experience at Aylesbury to guide us in building the present Institute, which was a very great factor; in fact, I think it is one of the greatest factors for success.

2446. With regard to the contribution from the County Council, indirectly, if not directly, I think the County Council of Berkshire helps you. It is in this way, is it not, that they would not give quite so much to the College if the college did not give something to you?—That is a question that I am afraid I am not competent to go into.

2447. I am a member of the Berkshire County Council and I can speak to that, and I do not want it to go out that we give nothing to the Institute?—Possibly, if you give more to the college on our account, that would be so, but I should prefer more direct assistance.

2448. You think you pay very dear for your milk at Reading?—No, I do not think we pay very dear where we are. I think we have very good terms for the milk, but what I mean is this, that you have certainly to pay more for the milk at a place like Reading, where the milk can be sold in the town if necessary, than you would have to pay in a place right away in the country where the farmer has no town in which to sell his milk, and if he wants to sell it he must put it on rail.

2449. Still you must be aware that the great majority of the milkmen all round Reading send their milk up to London?—Yes, quite so, and this man is situated quite near enough to retail it in Reading if he chose, but we have made an arrangement with him and of course we must have a supply from a farm close to; we could not do with rail milk.

2450. You made a remark about diminishing students; is not that to be accounted for entirely by the loss of the travelling dairy schools?—No, I should not like to say so—you mean the remark I made as to students from the

County Council schools who come for a short time and go away again?

2451. Yes?—You might establish a connection between that and the travelling dairy schools, but I do not think it is so.

2452. You have been asked about the cheese-making at Reading and cheese-making at home. Of course, the cheese-making at Reading is very much more varied than any home maker could possibly do?—Yes. If a man comes to Reading he can be instructed in whatever cheese he wants to make, and in all the different varieties—Cheddar, Cheshire, Stilton, Wensleydale, and so on—but if he goes to a farm he would probably only learn one method.

2453. Even if he only wanted to learn one method himself, it would give the student a good insight into the various varieties of cheese, and should make him a better man of business?—Yes.

2454. You rather surprised me when you said that butter did not sell at such good prices as it used to sell at years ago. I suppose I may take it that what you mean is owing to the large quantities of indifferent butter that it sold at a lower price?—Yes, I think you might put it in that way.

2455. If we had as good ways of making butter 25 years ago as we have got now we should certainly not have lost the industry as we have lost it at the present time?—Yes, there is a great deal to be said for that. The imports of butter, and of good butter, have increased tremendously in the last 25 or 30 years, and it is those imports that affect the price of the market.

2456. And our poor quality of butter made it worse?—Yes.

2457. Mr. Lamont asked you a little about cheese and butter factories. I should consider that in all probability our teaching was quite equal to that in factories, or possibly a little better. What is your opinion?—I should say so. I am a great advocate of the person being under a proper instructor or instructors, and learning to do the things themselves. I do not believe in looking on and just doing some little of the work yourself. I will give you an instance of that which was mentioned to me the other day. I was saying that ours was the first institute that was founded. "Oh!" said some one standing near me, "Lord Vernon established a factory at Sudbury before yours." I believe he did, but you could hardly class it as an institute. It was a factory. "Yes," said a man standing near me, "I went there myself, and all the time I was set to pulling milk up a hoist." If that is a sample of the work done at the factory, simply sticking to one thing, you are really better off at an institute where you are taught to do the whole thing yourself. I do not think you would be allowed to spoil butter, but you have the chance of experimenting at the Institute, and that is the most valuable thing of all, that you are able to do the work yourself.

2458. Are you satisfied with the Institute at Reading?—I think so. I am not always satisfied with the scientific knowledge of the students, but I think that applies to most institutes. I think you perhaps expect too much in the limited time a student has to give to the institute, and perhaps it is more a blot on the shortness of the time than on the teaching of the institute.

2459. With regard to the finance, everything is done that possibly can be done with the funds at your disposal, and if you had more money you would enlarge your work?—Yes, we could enlarge the laboratory, and we could have a more scientific equipment for research work, which is necessary, and which we ought to have in order to keep on advancing. That is one reason why I should strongly advocate more encouragement and more help, and on the other hand I think that with more encouragement we should be able possibly to lower our fees for the very students who most need them lowered. Those are the two reasons why I should advocate assistance being given us, and both of them are very strong reasons, I think. We really do want to have a more scientific and better laboratory accommodation in every way, and more bacteriological work, and everything of that kind pushed forward. Of course there are the college laboratories, but they are generally pretty full, and I am assured by the Principal that more could be done in that way if we had more room of our own.

2460. I think I know what your answer will be to this question—you are perfectly satisfied with the produce that you are able to turn out?—Yes, quite.

2461. (*By Mr. Davies.*) You have told the Committee

that the cost of the milk was a great deal more in Reading than you previously paid at Aylesbury?—Yes.

2462. I suppose there are other compensating advantages which you get from being near the University College?—Yes, we of course get the advantages of scientific training quite close through being married to the College, whereas when we were at Aylesbury we had to find our own.

2463. Do you look upon yourselves as the agricultural department of the University College at Reading?—No, we look upon ourselves as the dairying department of the University College. The College gives instruction in dairying apart from the instruction which we give in the Dairy Institute. They give their own dairying instruction as well as us, and there are examinations in dairy instruction at the College quite apart from the dairy instruction that is given in the Dairy Institute.

2464. Do you not occupy laboratories and so on that belong to the College?—Yes, we do to a certain extent, and the room is rather crowded, I think. We should like to have more room and be able to give our students more room. The Principal informs me that it is a pity that we have not got more laboratory accommodation. We work in the College laboratories you see; we have a small laboratory of our own, but it is a very small one compared with what it ought to be.

2465. Is there a certain amount of over-lapping between your department and that of the College?—No, not over-lapping, I would rather put it overcrowding; I think we strain the laboratories of the College.

2466. Is it not the fact that the College gets a pretty big grant from the Treasury?—Yes, I do not quite know what the amount of it is, but we get a portion of it; £300 of it is allocated to us.

2467. I think you told us that your students were practically divided into three classes?—Yes.

2468. Do you make any differentiation in the charge?—No, that is only a rough division as regards the percentage division. What I call class I is the largest section. We make no difference in the fees for any class of student either rich or poor.

2469. Do you not think it would be desirable to make a distinction between those students who are going to become factory managers and the others?—That is very pretty in theory, but it would be very difficult to work, I am afraid.

2470. You do not think you could make a reduction in the fees for those who were the sons of small farmers?—If you did that you would have to be always defining what was a small farmer, and you would have to say when he was competent to pay, and when he was not competent to pay, and I should not like to be the inquisitor.

2471. Some witnesses have told us that that is being done and that it is possible. You have not any travelling dairy schools now?—No, not now.

2472. They have all been given up?—Yes, they have all been given up. We worked one in the counties, and we worked one when we were at Aylesbury, but there is nothing of that kind in Reading, in fact all the travelling schools have been given up practically since we have been there. I should say to a certain extent that the colleges have taken their place.

2473. Did they not serve to bring students to the College?—Yes, certainly.

2474. There is only one other thing I want to ask you. Mr. Lamont told us about his experience in Denmark. I was not quite sure what your opinion was with regard to that as to whether more attention ought to be paid to scientific apparatus and so on, or otherwise?—You mean with regard to sterilising and pasteurising milk?

2475. Yes?—I think if the demand progresses for sterilised or pasteurised milk in England, attention will have to be paid to it, but I do not think there is a very great demand for that at the present time. There is a modest demand in large towns, but hardly any demand elsewhere, I should say. I do not mean to say it will not grow, but it has not come yet.

2476. Is it not the duty of your Institute to provide for that and show these people how to do it?—Yes, but it is a very vexed question.

2477. Do you carry on any experiments in your Institute?—No, except in a very modest way—you mean in the way of cheese-making?

2478. Yes, you have cows now, have you not?—No, we have no cows; the cows belong to the College.

2479. Do they allow you to carry on experiments with them?—They carry on the experiments with them themselves—openly, of course.

2480. Do you not wish to get in closer touch with the College?—No, we are on a very friendly arrangement with the College. You see the farm itself has only been started in the last year or two by the College; it is quite a new addition.

2481. (*By Mr. Lamont.*) I should like to ask you one or two other questions on the same point. You have told us that you have no farm, and therefore, of course, you have no cows. You have accordingly no training in milking, I take it?—No; there is no practical training in milking.

2482. No experiments are going on as to the results of feeding on the quantity or the richness of milk?—Nothing beyond the experiments that have now been started by the College with their cows. They are now carrying on what you may call experiments to demonstrate the result of feeding on yield of milk and so on—I do not say they are advanced experiments, but they direct the attention of the students to what they ought to know.

2483. Do you direct the attention of your students to the experiments that are carried on at the College?—Yes: for instance the college milk comes in to us and they are shown the percentages there are in the college milk as compared with the milk that we get from elsewhere, and, of course, the head of the agricultural department who lectures in the Dairy Institute would draw the attention of the students to what experiments were going on in the College, or to any experiment that he himself was conducting. The connection between the two is very intimate; the head of the agricultural department of the College comes in and lectures to the students in the institute several times a week.

2484. There is another very important point I want to put to you. You know that in Denmark, and in the United States, and possibly also in many places in this country, a new method of milking has been introduced within these last few years by a kind of massage of the udder, whereby a further 5 per cent. of the ordinary yield is obtained probably, and I dare say you know that that last milk is much richer in the way of butter fat than the milk that has been got before. Have you any means on the farm of directing the attention of the students to that?—The principal informs me that since the College farm has started, the students have the advantage of going there to learn milking.

2485. They will, therefore, have that advantage, otherwise it would seem to me that if you have no cows, and no factory, your work would be scarcely complete?—You must remember that so many of our students come to us from farms that I almost invariably ask the students, who come before me for examination, where they have come from, and whether they have learnt to milk, and I should say 60 or 70 per cent. of them tell me they know how to milk, and have been in the habit of milking.

2486. You obtain the great preponderance of your milk from outside, from other farms?—It all comes either from the neighbouring farm or from the college farm.

2487. Do you have any system of inspection of the cows in the farm from which the milk comes?—We always have a system of analysing the milk, as to what it consists of.

2488. But not in the direction of examining the cows themselves, as to how they are kept, and as to their general healthiness?—No, but I think we are satisfied of that. Two members of the committee visit both farms very often, and if they had any complaint to make they would lay it before the committee.

2489. Of course no one dreams of sterilising milk now, but a great quantity of milk is pasteurised, and as you know it is sold in two qualities, one quality for feeding children at a higher price than the other, and a much more careful system of supervision goes on in the places from which that milk comes. That is what I wanted to get at, whether anything was being done on those lines?—No, very little is being done at present in the College on those lines.

2490. May I ask you, as a last question, whether you do not think your work would be more complete if it did begin at the beginning, and if you had your own dairy, your own farm, your own cows, and your own factory?—I quite admit that. If you have your own dairy and your own cows, it would be a great advantage, but if you have not got those conveniences, you must do without.

Mr. W. Ashcroft.

8 May, 1907.

Mr. MILES BENSON, called and examined.

Mr.
M. Benson.
8 May, 1907.

2491. (*By the Chairman.*) You are the Manager and Chief Instructor of the British Dairy Institute at Reading ?—Yes.

2492. The instruction given at the Institute is both practical and theoretical ?—That is so.

2493. And is arranged with a view to meet the requirements of those who need either elementary or advanced dairy instruction ?—Yes.

2494. Or who wish to specialise in the manufacture of any particular variety of dairy produce ?—That is so.

2495. Perhaps you will now give the Committee a few of the special facilities which are provided for those who wish to study dairy chemistry, milk analysis, or bacteriology ?—With regard to the dairy chemistry, we have recently entered into an arrangement with the University College, who are practically adjoining us, to give a course of dairy chemistry extending over a period of six hours per week. That has been arranged since the beginning of the college term. With regard to bacteriology, I may say that the lecturer of the agricultural department of the University College is giving weekly lectures on general bacteriology. In addition to those lectures we have a scientific lecturer from the College whose regular work it is to lecture at the Institute during the college terms, so that we not only get bacteriology and chemistry in the College, but we get college lecturers on those two subjects in the Institute. That has been very much appreciated, because in previous years we did not get the amount of dairy chemistry and bacteriology which was necessary, principally because we had no such arrangement made for instruction in those subjects.

2496. Will you tell us what you do in the way of research work ?—I am afraid there is not a great deal of that work done. Of course research work would take up a good deal of time. The Institute is open all through the year, with the exception of a short vacation at Christmas, and during the year we have a large number of students—the average is 100—and the time that the institute staff has at its disposal would not allow of much research work. Of course we should like to see it done. We have only a certain claim upon the College for research work, and we should like to be in a position to ask the College to assist us still further in that respect. At present the College is giving us all that we are entitled to in the way of instruction.

2497. Do you think it is more the duty of the College than of such an Institute as yours to carry out research work ?—We have not the staff to carry out research work, but we should like assistance from the College in conducting research work at the Institute.

2498. The students may join at any time ?—Yes.

2499. And for any period ?—Yes.

2500. Is there any entrance examination, is any test applied to the students who come to you ?—No, there is no entrance test of any kind.

2501. Are any scholarships held ?—There are very few. We shall have scholarship students from Glamorganshire and the County of Dorset, but those are about the only two counties who send scholarship students to us.

2502. Your summer course of six months begins in April, and ends in September ?—Yes.

2503. For what instruction does that course provide ?—That is the course that we would recommend to a student who proposes to come to us to take the certificates referred to by Mr. Ashcroft. That is the course that would be recommended to a student who comes to us in order to qualify for a butter and cheese-making certificate.

2504. The winter course commences in October and extends to March ?—Yes.

2505. Who are the students who attend the summer course, and who are the students who attend the winter course ?—In the winter course we get a good number of students who come to learn butter-making and soft cheese-making, and a number who come to learn chemistry and milk analysis, milk testing and dairy bacteriology.

2506. Do both the students who attend the winter course and the summer course attend scientific courses ?—Yes, they get scientific instruction during that time.

2507. Students who wish to take the higher diplomas in dairy farming and dairying you recommend to take a preparatory course of agriculture at the Reading University College ?—That is so.

2508. In addition to the summer course at the Institute ?—Yes. In those examinations where diplomas are awarded a considerable amount of agriculture is necessary, and for many years past a great number of students have entered for this diploma examination who certainly have not had the necessary training in the science of agriculture. Of recent years, upon that account, we have recommended students who intend to learn dairying thoroughly to take a college course. It may be a sessional course or a two-term course, dependent on the knowledge they possess when they come. That course would be taken previous to a six months' course in the Institute, where they would gain their knowledge on practical dairy matters.

2509. Do any of the students who attend the winter course go through this preparatory training at the University College ?—Very few.

2510. You consider that for that class of student it is less necessary ?—Yes.

2511. The main object to those students is practical training ?—Yes. Of course during the winter we have all the College agricultural students once weekly, and in some cases twice weekly.

2512. Then you have students who attend for periods exceeding one month ?—Yes.

2513. A month is the minimum, is it ?—Many come for less than a month. Sometimes we have a student who comes for a fortnight, or even less than that.

2514. They take instruction in cheese-making and the general routine of dairy work ?—Yes.

2515. That is entirely practical ?—Yes.

2516. They do not get any certificate ?—No, we award them no certificate at all.

2517. During recent years you have found that there is an increased demand, as compared with former years, for instruction in scientific work ?—Yes, I think that is largely on account of the appointments that are being made by dairy factories and milk retailers. Those appointments afford openings for men who can test milk or any other dairy product, and in addition to that there is a general desire to study dairy bacteriology and chemistry.

2518. That is a result, you say, of the appointments which are made for the management of dairy factories, and of the farm inspectors who are appointed by the dairy companies ?—Yes.

2519. Dairy companies have taken to appoint farm inspectors ?—Yes, the people who deal in milk are beginning to realise that they must systematically test and analyse milk and get to know what they are selling.

2520. Therefore the result of the increase of dairy factories has undoubtedly acted beneficially in recruiting students for your college ?—Yes, but I should not say entirely. Many of the firms who are selling large quantities of milk and other produce have appointed men to do nothing else but test and analyse the produce which goes from their premises, and certainly there are many good appointments in factories for men who know how to analyse and test milk, butter, cheese, &c.

2521. What is your view about the questions which were asked Mr. Ashcroft with regard to the desirability of having a dairy factory attached to the Institute ?—I may tell you that in my student days I went to a factory to learn dairying. I went to a factory for six months, and during that time I learnt nothing of any value to me. I was never allowed to touch anything. I was never given even an opportunity of making up a pound of butter. The result was that I was unemployed for most of my time, and, as Mr. Ashcroft mentioned, I did a great deal of the hoisting up of the milk in the lift. I do not think a factory is the right place for a student to earn dairy work ; he would be inclined to get into careless methods without a careful preliminary training on a more primitive scale, and in addition to that he would be running too great a risk of spoiling produce.

2522. You think he should have the other training first ?—I think so.

2523. You will admit, of course, that the factory that you are referring to is an instance of how the thing ought not to be done, but if there was a dairy factory where instruction was properly given, then you would not deny, would you, the importance of it ? Take the subject of book-keeping, for instance ; that is a very important subject ?

—Yes, but of course my point is that in my student days I did not know where to find a factory where such instruction was given, and I think that the same difficulty exists now.

2524. You are speaking of your personal experience in former days?—Yes.

2525. Do you admit that the extension of dairy factories would be beneficial? Take the case of Denmark, where they are everywhere, and where I believe instruction is given?—Yes.

2526. Obviously that includes some knowledge, for instance, of machinery; you would require some engineering knowledge?—Yes, of course a man who is going to enter into a milk concern where a lot of milk is handled must learn somewhere how to manipulate a large quantity of milk, and how to manage the machinery which deals with a large quantity of milk, and the factory is the only place where he would get that knowledge.

2527. Quite so; therefore you would admit that with proper organisation, and as a sequel to the individual instruction given at your college, such instruction would be useful?—Certainly.

2528. Among the students at present at Reading you have one who is studying in the interests of one of the largest factories connected with milk in this country?—Yes, that is the Anglo-Swiss condensing factory.

2529. Two students have recently passed through the school who were connected with one of the largest dairying concerns in the West of England?—Yes, I refer to the Wilts United Dairies, a large establishment in Wiltshire.

2530. Will you give us a list of the localities and counties from which students come?—I have a statement here which supplies that information.

(The Witness put in the following table):—

COUNTIES AND COUNTRIES FROM WHICH STUDENTS HAVE BEEN DRAWN, FROM JULY 6TH, 1896, TO MARCH 31ST, 1907.

Northumberland	1	Oxfordshire	38
Cumberland	9	Hertfordshire	22
Westmorland	1	Somerset	48
Durham	9	Devon	13
Yorkshire	12	Cornwall	16
Lancashire	29	Dorset	95
Lincolnshire	2	Wiltshire	27
Cambridge	1	Hampshire	60
Norfolk	7	Middlesex	6
Suffolk	13	Surrey	27
Essex	48	Sussex	14
Kent	23	London	90
Nottinghamshire	2		
Derbyshire	9	North Wales	15
Staffordshire	6	South Wales	66
Cheshire	13	Scotland	31
Shropshire	19	Ireland	33
Hereford	3	Jersey	6
Gloucestershire	7	Isle of Wight	2
Worcestershire	23		
Warwickshire	7	Australia	5
Leicestershire	1	New Zealand	1
Huntingdon	1	Jamaica	1
Northamptonshire	4	Canada	1
Bedfordshire	7	Natal	7
Buckinghamshire	28	British E. Africa	1
Berkshire	138		

FOREIGN COUNTRIES.

America	2	Cyprus	2
Greece	1	Russia	1
South America	8	France	2
Germany	6	Denmark	3
Switzerland	1	Portugal	2
Norway	1	Bulgaria	1
Siam	1	Egypt	1
Holland	3		

Summary.

English Counties	879
Wales	81
Scotland	31
Ireland	33
Jersey and Isle of Wight	8
Colonies	16
Foreign Countries	35

Total Students 1,083

2531. They come from all parts of the United Kingdom, and there are 35 from foreign countries also?—Yes.

2532. You can also give us an analysis of the Students' Register showing the length of course?—Yes, from the date of transference to Reading.

(The Witness put in the following table):—

ANALYSIS OF STUDENTS' REGISTER, JULY 6TH, 1896, TO MARCH 31ST, 1907.

Year Ending Mar. 31st.	Total Students.	Men Students.	Women Students.	LENGTH OF COURSE.							*
				Less than 4 weeks.	4 to 6 weeks.	6 to 8 weeks.	8 to 12 weeks.	3 months.	6 months. and over.		
July 1896-7	82	37	45	41	21	8	6	6	—	—	
1897-8	133	48	85	49	60	8	6	10	—	—	
1898-9	131	44	87	37	58	7	10	19	—	—	
1899-1900	135	37	98	43	47	7	15	23	—	—	
1900-1	87	15	72	29	31	5	13	9	—	—	
1901-2	93	34	59	22	37	8	11	10	5	—	
1902-3	75	24	51	19	32	3	7	10	4	—	
1903-4	62	25	37	15	22	4	8	8	5	—	
1904-5	85	47	38	20	12	12	9	13	2	17	
1905-6	98	67	31	32	11	4	3	8	8	32	
1906-7	102	60	42	34	11	9	8	7	2	31	
	1083	438	645								

* University College Sessional Students attending the Institute once weekly.

2532A. You say you have had great difficulty in keeping in touch with students after they leave you?—Yes, that is a difficult matter.

2533. You have therefore been able to give us only an approximate account of their doings?—Yes.

(The Witness handed in the following statement):—

10	per cent. take up dairying in the Colonies.
18-20	„ return to their dairying pursuits at home.
5-6	„ go as Dairymen.
12	„ Dairymaids.
6	„ Dairy Teachers.
10	„ Take up dairy-farming.
25	„ Farming.
4	„ Agricultural Lecturers.
5	„ Farm Bailiffs.
5-10	„ Inspectors, Analysts.

A large number of Reading students hold appointments as dairymaids in private dairies and estate dairies, and in several instances these dairymaids have established a reputation at important agricultural shows for their butter.

2534. Among the teachers of dairy work there are very few whose names do not appear on your Institute register?—I think that is so.

2535. At the present time three of your old students are employed as Government Dairy experts in Australia and Natal?—Yes.

2536. You have also given us the results of the public examinations of your students?—Yes. I think you will find in this statement, information given on a point that was put to Mr. Ashcroft referring to the number of diplomas awarded to the Reading students. You will see that 39 per cent. of the total number of National Diplomas awarded at the English centre were gained by Reading students.

2537. That is by students of the College?—Yes, joint students of the College and the Institute.

2538. You also give the results of the British Dairy Farmers' Association's examinations?—Yes; those are held twice yearly.

(The Witness handed in the following tables):—

DIPLOMAS AND CERTIFICATES GAINED IN PUBLIC EXAMINATIONS BY READING STUDENTS JULY, 1896, TO MARCH 31ST, 1907

National Dairying Diploma (English Centre).

Year.	Diplomas Gained.
1896	5
1897	4
1898	4
1899	5
1900	1
1901	4
1902	5
1903	3
1904	9
1905	3
1906	4

Total 47

Total number of Diplomas awarded at English Centre, 120.
39 per cent. gained by Reading students.

Mr.
M. Benson.
8 May, 1907.

BRITISH DAIRY FARMERS' ASSOCIATION'S EXAMINATIONS,
JULY, 1896, TO MARCH 31ST, 1907.
(Examinations at the Reading centre.)

Year.	Diplomas.	Teachers' Certificates.	Cheese-making Certificates.	Butter-making Certificates.
1896 ...	4	3	1	2
1897 ...	2	2	6	13
1898 ...	3	1	12	13
1899 ...	—	5	6	9
1900 ...	1	3	5	7
1901 ...	3	3	6	13
1902 ...	2	2	6	8
1903 ...	3	—	7	15
1904 ...	4	—	10	11
1905 ...	2	1	6	9
1906 ...	2	1	9	11
Total .	26	21	74	111

2539. You have also given us a statement showing the occupations of parents of students, and the subsequent occupations of the students themselves?—Yes.

(The Witness handed in the following statements):—

OCCUPATION OF PARENTS OF STUDENTS WHO ATTENDED IN
THE YEAR ENDING MARCH 31ST, 1907.

Landowners ...	13
Farmers ...	48
Dairymen ...	5
Professional ...	21
Tradesmen ...	9
Manufacturers ...	2
Farm Bailiffs ...	4
Total ...	102

SUBSEQUENT OCCUPATION OF STUDENTS FOR THE YEAR
1906-7.

Dairymen ...	4
Dairymaids ...	12
Estate Agent ...	1
Dairy Teachers ...	7
Colonial Farming ...	10
Returned to dairy work at home ...	18
Dairy-farming ...	10
Farming ...	26
Agricultural Lecturers ...	2
Farm Bailiffs ...	5
Dairy Inspectors ...	2
In Dairy business ...	5
Total ...	102

2540. During the past ten years the institute has sent up annually to the London Dairy Show a large educational exhibit of dairy produce?—Yes.

2541. Approaching in weight $1\frac{1}{2}$ tons of produce?—Yes.

2542. In conjunction with that annual exhibit the College has contributed a scientific display?—That is so.

2543. That combined educational exhibit demands some months of preparation?—Yes. We commence to make the produce referred to in July. It has to be made with great care. The making of it is entrusted to students—those who wish to join the cheese-making classes at that time of the year are advised to do so when we commence to make the show produce. The exhibit not only provides useful instruction to the visitors at the show, but also to the students who are in training at the time when the produce is made.

2544. The number of enquiries that you have received during the year from the people who require either dairy-maids, dairymen, or teachers, has been 34?—Yes.

2545. During the year you have had also ten enquiries from past students requiring posts?—Yes.

2546. And 50 enquiries from the public other than past students for advice on dairy matters?—Yes; those enquiries are from people who have trouble at home in their own dairies with their butter or their cheese; they send samples to us probably of faulty butter, or cheese, and invite our criticism and advice thereon.

2547. Are samples occasionally sent to you for analysis with regard to imported butter and imported cheese?—No.

2548. What further development do you think should be given to the work of the institution?—I think that there is a great lack of knowledge in dairy bacteriology; we want

to be able to identify and classify the bacteria in milk. The books that we read on bacteriology describe some particular microbe that has been found in milk, and a name is given to that microbe. Then another investigator writes upon a microbe that he has discovered, and he gives it a name. We do not know but what this same organism is identical—whether it is the same thing grown under a different condition. We want some reliable information on dairy bacteriology. That is work that will take a lot of time, and it will mean considerable expense in equipment. That is the kind of work we should like to do at Reading. It is quite easy to isolate the microbes in milk, but it is another thing altogether to be able to isolate and to be able to identify them, and our difficulty is that we have nothing to refer to to help us in identifying these organisms which are constantly giving trouble in cheese-making.

2549. You mean that that is still an unexplored field of research?—Yes; particularly the organisms in milk which we have to deal with in cheese-making; then we would like to conduct an exhaustive experiment on the ripening of Stilton cheeses. We would like to know how to be able to turn a cheese blue at will, and there are many other experiments that would be useful connected with the ripening of such cheese, but which of course would take a considerable time to carry out.

2550. You think that the Board of Agriculture ought to give encouragement to such experiments?—I think so; I should be very glad if it would.

2551. (By Lord Barnard.) To follow up one of the questions which the Chairman has just put to you, have you any suggestions yourself as to how this knowledge could in the first place be obtained and in the second place diffused?—I think some years ago the Board of Agriculture conducted some most useful experiments in Somersetshire connected with Cheddar cheese making, under the direction of Professor Lloyd. Copies of the record of those experiments were published, and they were bought very eagerly by dairy students, who have made good use of them. From our point of view we should like to have seen those experiments carried on further.

2552. Do you think that if under the influence and guidance of the Board of Agriculture some central association of all the institutions engaged in dairy instruction were to be connected that it would be an advantage instead of each of them, as it appears to me at the present day is the case, working almost independently of its neighbour?—I think some such arrangement would be an advantage.

2553. One of the previous witnesses was asked whether he did not consider it would be of advantage for the purpose of following up the careers of students and also enabling them to continue the advancement of their own knowledge that associations or clubs of students should be formed?—I may say with regard to the institute students that a students' club has quite recently been started with a membership of over 100 already. I think that the students' club has been in being now for about a month. The secretary is the son of a Cheshire dairy farmer, who is secretary of the Cheshire Dairy Farmers' Association.

2554. That practically answers the question that you have, although only recently, realised the advantages of such an institution?—Yes.

2555. Now, to go to quite another branch of the subject, would you give the Committee very briefly an outline of your own career?—Do you mean what I have done?

2556. Were you in early life connected with farming?—My father was a yeoman farmer in the Pennine district of Cumberland.

2557. What led you to take up this particular form of farming—you talked about your student days just now?—I followed the example of a senior brother—

2558. Please do not go into very great detail because we have not a great deal of time left to us?—I may say that in 1886 I had a brother who was interested in dairying. There was no dairy school to go to, and he naturally went to some gentleman interested in dairy farming who could give him instruction. He went to Professor Long, who was then living in Hertfordshire, and he took instruction there for two years, and after his course there, was appointed manager of the British Dairy Institute at Aylesbury. He acted in that capacity until within two years of its transference to Reading. I was a student at Aylesbury in the first year that it started; I think I was there very nearly two years in all. There was then a great demand for instruction, and I spent several years going about from one private dairy to another giving private instruction. In the meantime I spent some months in

the various factories in this country, and I have been employed as a manager of a factory. I also took the opportunity of going round the various dairying districts, especially the cheese-making districts of Wensleydale, Cheshire and Leicestershire.

2559. How long have you been in your present position?—When my brother left Aylesbury he went to take charge of the Midland Dairy Institute, and I succeeded him at Aylesbury. I was in charge of the institute at Aylesbury in 1895 and 1896, and I went to Reading when the Institute was transferred, and I have been in charge for over 12 years.

2560. From what you have told us you have had considerable experience both in practical business and in teaching?—Yes.

2561. I daresay you are prepared to state that as the result of that experience you consider that the practical work alone is not a sufficient training?—No, it is not; certainly not.

2562. On the other hand you would not contend, I daresay, that theory alone is sufficient without practice?—I should not think so; I think the right way to train is to take the practical work first and the theoretical work afterwards. I must say that at one time I was rather prejudiced against theory, but now that I have to know more about theory, I prefer the theoretical work to the practical.

2563. Are your past students enthusiastic; do they admit the advantages which they have obtained?—Yes, I think so. Dairy students are very earnest sort of people who want to get all the information they can—at least that is so in our case.

2564. What ages are your students as a rule?—I should say the youngest students that we have would be 18 years, and the eldest may be—we had two students who left us recently whose ages were, I think, 60, but I should think that if we took the average age it would be 25 or 26.

2565. How many of them live in hostels?—All the girl students under 21 reside in college hostels. A very large men's hostel is being built in Reading for the college. That has been given by Lady Wantage, and when that hostel is built all the men students will reside in a college hostel too.

2566. You are going to abandon the lodgings system then, I suppose?—Yes, it is not popular; the students find it more comfortable in the hostels, and I think when the men's hostel is built it will be one of the finest hostels of its kind in this country.

2567. Can you tell us what it costs for lodgings in Reading?—To get comfortable lodgings it would cost from £1 a week to one guinea.

2568. What would it cost them in the hostel?—Practically the same.

2569. Are the regulations of the courses of study and so on entirely in your hands, or are they controlled by your committee in any way?—The courses of study?

2570. The courses of instruction?—As far as the practical instruction is concerned that is in my hands. We look to the College for the theoretical work. Of course, I do a good deal of theoretical teaching, but a great part of the theoretical work is directed by the College.

2571. Are there any failures for the diploma and certificate examinations?—There are failures and we have some students who are bound to fail. We, of course, have capable students and incapable ones, and it is very difficult to make a capable student out of an incapable one. The difficulty we have is this; that so many come to us who have forgotten their arithmetic, and we have to teach a great number of them the elements of arithmetic. That applies to nearly all these people who come from the country districts.

2572. It seems to me, as far as I can judge, from the evidence you have given to the Chairman, that the course pursued by the students is a little haphazard. It seems to me that the students can come for quite a short up to quite a long period?—That has always been so with a view to accommodating people in dairying districts who cannot come just when they like. We get a large number of students from the cheese-making districts who cannot come at a definite time; they prefer to come perhaps between hay time and harvest, or between turnip hoeing and hay time, and it is to accommodate those people that we keep the Institute open for them, to join when they like.

2573. I should like to know whether it is your opinion that your Institute should be left to make all its own regulations on questions of that kind, or whether there should be some central system of organisation, I will not

say controlled by, but under the supervision of the Board of Agriculture?—The difficulty I think would be that there are, of course, always local conditions to consider, and I think they would probably present a difficulty there.

2574. At present you are entirely unfettered by any central regulations?—That is so.

2575. Would it be practicable by the co-operation of all the institutions in the country and other experts on the subject to have more of a standardisation of butter than there is now?—Do you mean as regards quality?

2576. Quality and so on. I believe it is done in Denmark, is it not?—I do not know.

2577. So that the judges at local shows would be able to judge more critically the different exhibits?—In a large agricultural show, for instance, where there is a big entry of butter, it would be very difficult to judge all those butters on points because it would take up such an enormous time. I have judged at many shows where there have been large entries, and have tried to judge on points, and have found that it has taken up practically half the day, and even then I have not finished the work thoroughly. I think the fault lies in the fact that there are not enough judges to do the work at these shows. The judging of butter at shows would no doubt give more satisfaction if all judges made their awards according to flavour, texture, colour, appearance, and moisture present. Some judges do not recognise all of these merits, all of which contribute to the good properties of butter.

2578. I was referring more particularly to small shows where I think the result is far more doubtful than in the case of large shows. I am not an authority on butter myself, but I always very much doubt whether the prizes are correctly awarded?—I think there is a good deal of bad judging at some of these small shows. It is because all the properties of good butter are not taken into account.

2579. Do Government departments ever consult you at all—the War Office or any department of that kind?—I think not. We have enquiries from Government instructors in Australia very frequently, and we have applications from the Intelligence Division of the Board of Agriculture asking us to look over a pamphlet which is intended for circulation; to revise if necessary any little fault.

2580. The chairman of your committee stated it just now and I think you will support it, that you and other institutions similar in character are desirous of having further financial assistance from the Government?—I think so.

2581. You are desirous that you should have that assistance?—Yes.

2582. Are you in favour of the Board of Agriculture going to the Treasury and to the House of Commons for such a grant, and being able at the same time to say they are prepared to impose further regulations and conditions, or should they ask it without any conditions or regulations at all? Do you think any steps should be taken to say that any increased grant should be accompanied by any increased work, or any increased efficiency?—I think, so far as my experience goes, we have worked very hard for the amount that has been contributed towards us compared with what is done by Government assistance for colleges like those in America. For instance, some of the best bulletins that I read on modern experiments come from America. They are sent to me practically free of cost. I have only to intimate that I would like them and they are sent to me absolutely free year after year. An enormous amount of most useful experimental work is done in these colleges which I should imagine could not be done without financial assistance from the Government. We would like such experimental work conducted at Reading, but our staff is limited and there is very little time for work other than teaching.

2583. Then it amounts to this really, that you consider that the central authority, the Government of this country, has really got some leeway to make up first—that it has to catch the institutions up rather than that they should catch the Government up, that practically the Government is behind?—I think so; I think the headway the American colleges have made in conducting experiments has been due largely to the substantial help that they have had from their Government.

2584. (By Mr. Middleton.) You referred to our lack of knowledge on subjects connected with dairy bacteriology. I do not quite gather what you mean by that phrase. Is your difficulty at Reading that you have not got a bacteriologist who is able to recognise the organisms which you find in your produce, milk, etc.?—I think it would be very difficult to find a man who could recognise bacteria when he saw them.

Mr.
M. Benson.
8 May, 1907

Mr.
M. Benson.
8 May, 1907.

2585. But there are other methods?—Yes.

2586. My point is this: do you fail because you have not got the man who could conduct the work, or because you think you are dealing with a number of organisms which have not been described and which require description?—Yes, that is what I mean.

2587. You were referring just now to the bulletins which are issued in the United States?—Yes.

2588. You probably know, therefore, the work that Wisconsin has done, and also that in New York State station?—Yes.

2589. You think the work which they have done in connection with the ripening of cheddar cheese need not necessarily apply to cheddar cheese ripening in Reading and that there ought to be fresh investigations. Is that the point?—No, I merely wanted to point out that we learn more of experimental work through American bulletins than we do through English ones, because in America they experiment more and go more into the subjects which particularly interest us. Personally I should like to see a grant made to one or more agricultural colleges or dairy institutes for the sole purpose of investigating the bacteria which affect cheese-making.

2590. The work which has been done in that direction in foreign countries does not meet your case?—More requires to be done.

2591. Of course, you yourself are not concerned in the teaching of bacteriology?—I have been making a study of it for some three or four years, but I am not supposed to be a teacher of bacteriology. The bacteriology instruction is provided by the College, I assist in the teaching of that subject.

2592. From your own knowledge do you say you have come across what one may call new organisms?—Yes, organisms which it is impossible to identify by the reference which is available.

2593. It is in that direction that you want further help?—Yes.

2594. The value of the factory was referred to by one or two members of the committee. Have you not at the Institute all the types of machinery that would be found in a factory?—We do not profess to train a student in factory work, because ours is not a factory district. I have pointed out already to our committee that it is necessary that we should give instruction in the use of power-driven machinery. In the plans of the new building provision has been made for produce to be made on factory lines, that is with motive power. We do not ignore that necessity.

2595. So that when you are fully equipped you will be able to do all that a factory could do, except give them business experience?—Yes.

2596. Which, of course, could only come by actual practical work?—Yes.

2597. (*By the Chairman.*) In your teaching is there any knowledge imparted of cattle-breeding?—We have lectures. Students who take the six months' course, which extends from April to September, will have a definite number of lectures on cattle management—the management of cows. They are taken over farms usually once a week, and if it is not a farm that is visited they are taken to some demonstration or other which will afford them useful instruction either in dairy work or dairy farming. We arrange demonstrations, and we occasionally visit a London dairy. Only last year we visited one of the largest milk establishments in London. Lectures on the management of cattle are given at definite periods by the college lecturer.

2598. Also on the feeding of cattle?—Yes.

2599. And of the influence of the feeding of the cattle on the milk?—Yes, that is included.

2600. And on the results the milking processes give?—Yes, that is included in the syllabus of examination which our students are working for.

2601. Is that the examination of the British Dairy Farmers' Association?—Yes, we have that examination twice a year, and we are continually going over that syllabus.

2602. Is anything done in the way of hygiene?—As regards dairy work?

2603. As regards the influence of hygiene on dairy work?—We do not make a point of sterilising milk, but we do

pasteurise on a small scale. We pasteurise all our milk for butter-making purposes, but I find in the particular locality of Reading that people will not have pasteurised milk for drinking purposes. You have to force it upon them very strongly in some districts, and even then they will not have pasteurised milk. I have a brother who has two large milk-retailing establishments, and he tells me that the public prefer good clean raw milk to that which has been treated by heat, and that it is only when there is a scare, for instance a fever scare of any kind, that he resorts to the pasteurisation of milk.

2604. Lord Barnard alluded to the necessity of standardising the quality of butter. As you are aware and as Lord Barnard has pointed out, to that is due the great success of the export trade of butter from Denmark, and the security which is given to the public in England with regard to the quality of butter in accordance with the present legislation. I do not know whether that is a subject which you have enquired into. Do you think that is sufficient?—I do not know that it covers all the loopholes. I do not think it does.

2605. Of course you are in favour of stringent measures being taken to prevent the adulterated article coming on the market?—Yes. I know of certain methods and processes connected with the butter trade that I should be sorry to describe here.

2606. (*By Lord Barnard.*) I should like to ask you a question arising out of the question that was put to you with regard to giving attention to the breeding of suitable dairy cattle. Have you by any chance received in the course of the last few months an enquiry for information on that subject from some American university. I have myself, but I cannot remember the name of it?—No, I have not received any enquiry of late.

2607. I recollect now it was on dairy shorthorns—for statistical information with regard to the milking capacity of shorthorns. I am a shorthorn breeder, as you may know?—I received a similar enquiry some time ago from *Hoards Dairyman*, an American paper, enquiring into the milking properties of the English shorthorns. The editor was under the impression that the shorthorn was an unsatisfactory dairy cow.

2608. The application to myself was certainly from a college. I merely introduced it to show the enterprise of American colleges in trying to obtain information on such an important point?—Yes.

2609. (*By the Chairman.*) I understand your view is that a great deal more has to be done with regard to research, and that you would like the Board of Agriculture to find specialists who could devote their whole time to that work of research which you have described?—Not their whole time necessarily, but a certain definite portion of their time to a college.

2610. I understand that the work is of a very intricate nature?—That is so.

2611. The number of people who are competent to conduct such research is, of course, limited, and therefore you would select the best man that was available, and do not you think it is desirable that that should be done, and that they should be allowed to devote their whole time to it?—If that arrangement could be made without bringing up a financial question, yes.

2612. I am now asking from the point of view of the importance of these experiments?—It would be desirable.

2613. (*By Professor Middleton.*) Your suggestion was that your Institute should be furnished with a fund which would enable it to engage a bacteriologist?—Yes, a fund to be set aside for bacteriological investigation.

2614. Not that a bacteriologist should be furnished by the Board, but that the funds should be furnished by the Board?—Yes.

2615. (*By the Chairman.*) You would be pleased if one was found who could devote his whole time to it?—Yes. I think the co-operation of a practical man in a scientific experiment is too often overlooked. A scientist very frequently conducts experiments which do not bear upon the difficulties of the practical side of the business.

2616. You would like such a man to be attached to the Institute, but that he should be under your direction, and that he should devote the whole of his time to such investigations?—Yes, I would like to work with such a man.

SIXTH DAY.

Thursday, 9th May, 1907.

PRESENT:

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Sir C. THOMAS DYKE ACLAND, Bart., called and examined.

2617. (*By the Chairman.*) You are Chairman of the Experiments, of the Publications, and of the Dairy Committees of the Bath and West and Southern Counties Society, and also Chairman of the Devon County Education Committee?—Yes.

2618. Perhaps you will explain to the Committee what is the nature of the experiments that the Society carries out, their objects, methods and results?—The Experiments Committee was started about 25 years ago, I think, and it went on the principle of illustrating for the benefit of the farmers all over our district the results and principles that had been arrived at at Rothamsted, not in the way of distinct research, but for the purpose of letting farmers test, with guidance and assistance, the results of those principles on their own farms under varying circumstances. We were rather hampered for money, and so we could only have five or six experimental stations. Of course we should have liked to have had a good deal more, but the funds of the Society would not run to it. We have maintained the system of experiments from that time down to the present time, and during the last six years we have been experimenting, with the co-operation of the Board of Agriculture, on the subject of the influence of manures upon mutton. That, I think, is the chief experiment at work now. We have also five or six experiments generally devoted to questions connected with the improvement of grass land, carried on, not for purposes of research, but as illustrating principles arrived at elsewhere, so that farmers in each of their own districts should have an opportunity of seeing what has been done.

2619. That is done in various centres?—Yes, we have had sites at various different places; the sites have been moved about just according as landowners or societies put sites at our disposal. For instance, on coming down to Devonshire we asked for a clay site and a sandstone site. We also tried to get a site on the siliceous ground in the north part of the county, in order that Devonshire farmers might see as nearly as they could how far the principles arrived at were applicable to their own circumstances.

2620. Who are the persons who conduct these experiments?—We have a steward who is a very qualified man, Mr. Ashcroft, and before him we had another man who was a land agent, who was a very qualified man. We have not had any chemist to superintend it. We have always had the guidance of Dr. Voelcker in laying out the sites. He has always been co-operating with us in carrying them out, and he has reported upon them, and we have also had the assistance of Mr. Carruthers with reference to the grass experiments, and indeed with reference to wheat and barley experiments; we have always been guided with scientific assistance, but we have relied mainly on our own consulting officials, Dr. Voelcker and Mr. Carruthers.

2621. How are the funds provided?—From the Society's fund. The Government makes a special payment in connection with the experiment on the influence of manures on mutton, but had not previous to the commencement of that experiment, made grants to the Society in respect of its experimental work.

2622. You could carry out more experiments if you had more funds?—Certainly; we could multiply the sites. I do not think we should like to desert our system.

2623. Then with regard to the Journal which you publish for distribution?—We have had a Journal which has been going on for 70 or 80 years; I cannot tell you when the first number of it was published; and besides that we have been in the habit of publishing extracts from the Journal on different subjects. Here is a report on experiments, another one on dairy education, another one on the art of butter-making, and so on. These things have been published and sold at cheap rates or distributed gratis according to circumstances, sometimes the one and sometimes the other. They usually have been extracts which have been taken out of the Journal, and they have been placed at the disposal of persons who wanted them, and have been more widely distributed than the Journal itself could be.

2624. Is that a gratis distribution?—Not by the Society, but by members of the Society.

2625. The farmers read these extracts?—I think they do.

2626. And appreciate them?—Yes. I have often heard farmers express gratitude for the information they have found in the Journal, and in these extracts from it.

2627. Do they apply the hints that are given in those extracts?—Well, that is a thing that I should hardly like to say.

2628. You have travelling schools for dairying in Devon and Somerset?—We had, but they are now in both cases run by the County Council in each county, and not by the Bath and West Society. They were set on foot by the Bath and West Society, and then each county in its turn took them over. I know in Devonshire they are entirely now in the hands of the Education Committee of the County Council, but they were started by the Bath and West of England in each case.

2629. Does the County still carry on this dairy school?—Yes, and there is a big demand for it, and one which is constantly increasing; indeed, it is engaged for the next 12 months at different places in the County.

2630. Under your auspices?—Under the auspices of the County Council.

2631. But the Society does not carry on the schools any longer?—The Society handed them over to the County Councils when they were prepared to take them over.

2632. The Society has left off carrying on these dairy schools?—Yes, I think it is true to say that the Bath and West have not now any migratory butter school, but it maintained a connection with the cheese school in Somerset until quite recently.

2633. Then you have a stationary cheese school?—That is the one I am speaking of, the cheese school in Somerset. It is stationary in this respect, that it does not methodically move about like the dairy schools do. In the cheese district it has stayed on one farm, I think, for two or three years, and then moved to another farm for two or three years.

2634. In that sense it is also a travelling school?—In that sense it is a travelling school.

2635. I understand that has been taken over by the

Sir C. T. Dyke
Acland.
—
9 May, 1907.

Sir C.T. Dyke Acland. County Council in Somerset?—Yes, it is entirely managed by the County Council.

9 May, 1907. 2636. They provide the funds?—I think so.

2637. The society also had travelling farriers' schools for Somerset, Devon and Dorset?—Yes. Those again were started by the Bath and West of England Society, but were taken over in Devonshire, and also in the other two counties, entirely by the County Council. In Devon the school was abandoned for a year or two, but it is resumed again in our scheme for next year.

2638. Is that attended by farmers' sons and farmers?—No, I should say it was more attended by blacksmiths, but I think if a farmer's son wished to become a student he would be allowed to do so. It has been extremely appreciated.

2639. By the farmers?—Yes, very much indeed.

2640. What is the experience of the Agricultural Subcommittee of the Devonshire County Council with regard to lectures?—Soon after the technical education system was put into force we started some veterinary lectures, and they were attended in very various ways. In some places they were very well attended, but in other places they were scouted. Our experience was such that we did not carry them on after a year or two. We did not on the whole think that the profit gained by the farmer was sufficient to make it worth while continuing them; they were too apt to ask the professor for special prescriptions and instructions that applied to their own individual cases, and on the whole we came to the conclusion that the money was not well spent, and we gave it up. We do, however, find that instruction in agriculture, horticulture, bee-keeping and in poultry-keeping is very much appreciated. We have men going round the county under our Education Committee in Devon, and we find that that is very much appreciated, and I think that the farmers are anxious that it should be maintained, as far as I can judge.

2641. You have no difficulty in finding fit lecturers for those lectures?—No, I do not think we have any difficulty in that respect.

2642. Are there any chemical lectures?—No; I do not think purely chemical lectures have had any real value; we tried them a little, but it has not come to anything.

2643. Are there any scholarships given to farmers' sons?—About 20 years ago we offered some scholarships to farmers' sons, but they were not well taken up. We offered scholarships to farmers' sons who intended to become farmers, but we did not find them well taken up, and we, therefore, abandoned that. Then we tried an agricultural side at one of our secondary schools. That went on for a few years. I think we did get once as far as 20 students who took the agricultural side, but that has now also proved a failure, and we have abandoned it.

2644. That was an agricultural side to a technical school?—Not a technical school, an ordinary secondary school, one of the old endowed grammar schools, at Ashburton.

2645. Is it your experience that secondary education had better be general—that it is no use starting an agricultural side to secondary schools?—That is the general opinion certainly, and my own view with regard to that is that it is wiser to let the farmer's son have the widest and broadest general education that you can give him to as late a period as possible—defer the specialisation at school till the last possible moment. I think if he is a farmer's son—and I am speaking of farmers' sons—he gets sufficient experience in his ordinary life at home to enable him to learn, probably, more farming than you could teach him at school, and what you want to do is to let him have the widest and broadest general education for as long as you possibly can, and so increase his powers of reasoning and observing, and make him an intelligent and sharp lad. I do not believe you can teach practical agriculture at school; you can teach the scientific principles which affect the practice of agriculture, but the practice you cannot teach at school. I remember the school which was started at West Buckland many years ago by Prebendary Brereton and the present Lord Fortescue's grandfather. That was intended to be a school for farmers' sons, and I think there was a school farm attached to it then. The farming part of it never succeeded. The school was very well carried on and succeeded very well for a long time; it was almost the only secondary school of the middle-class type that we had for the county at that time, but of late years it has not had nearly so favourable an experience. It is very much better now

than it was, but that is not in consequence of the teaching of farming. That has not been done. The teaching of farming entirely fell through. It is a good general education of a business-like character that a farmer wants for his son.

2646. And then encourage them afterwards to go to an agricultural college if they have the means to go there?—We have had no agricultural college in the West, and I do not think that many of the farmers that I know would send their sons to an agricultural college if we had one.

2647. You do not think the want of an agricultural college in the West of England is felt?—No, I honestly do not, and I say so definitely, because three or four years ago—I cannot give you the date exactly—there was great pressure put upon us to spend some of the "whisky money" in starting an agricultural college, and many members of the committee were very sceptical about it. As far as I can recollect, we sent round circulars to different boards of guardians to find out the opinion, as well as we could, of the farmers, and my impression of it now is that out of 16 boards of guardians about 15 were against it. I cannot quite recollect the figures, but at any rate we came quite clearly to the conclusion that an agricultural college would be pure waste of money.

2648. (*By Mr. Latham.*) Is it fair to ask you to say whether you think the good teaching of our society—the Bath and West of England Society—has anything to do with that? You will admit that the teaching of the Bath and West of England Society has been very much appreciated in the West?—Yes, I think so.

2649. Your last remark I rather thought applied to that, and that, had we not had such good teaching by the Bath and West of England Society, the need, possibly, for an agricultural college might have been stronger?—I do not know that I should quite agree to that, because the teaching of the Bath and West of England Society has been available for adults, and an agricultural college, as I understand, is intended for boys, or at any rate quite young farmers, before they go into business, and I think the two cases are different.

2650. (*By the Chairman.*) Can you give the Committee any information about the continuation schools?—We find them an extremely valuable means of instruction in the country wherever we can start them. There is no question about that. I think the whole of the agricultural community, if I know anything at all about it, are well aware how fast the process of forgetting what a boy or girl learns at school sets in as soon as they leave school. I do not think there is the faintest doubt about that; it is universally known, I think. Many people say that the work of the schools is entirely wasted, because it is all forgotten so soon afterwards. I do not know how far one can carry that, but I am very convinced that continuation schools are of the utmost value. There again, however, I do not know that you can teach agriculture; I do not think you can. I think you might stimulate subjects which would be of interest in all sorts of connections with agriculture; you can teach children to observe the habits of insects, various different kinds of nature study, you can enliven them in a certain sense, you can carry further in the continuation school the object lessons which have been part of the instruction in the ordinary day school, and above all things you can foster and continue and develop their desire to learn, but I do not think you can teach them agriculture. You can give them opportunities of learning. But then you must remember that in the rural districts there are a large number of districts where a continuation school is nearly impossible—when I say it is nearly impossible I mean a school that is worth maintaining. I do not think it worth maintaining a school just for the sake of educating three or four children; and in many cases you cannot get more than that together. In many villages it is impossible to get a good nucleus together, but where you can get a good nucleus, then I think it is worth doing.

2651. Where they exist they are well attended?—That depends a great deal upon the teacher. I think they are appreciated by the pupils where they are well done, but it is, of course, quite conceivable that the teacher may make it so dull, or in some way or another alienate his pupils and make them lose their interest, and I have known them die out. As a rule, however, I should say they would be appreciated.

2652. You think they should be made attractive?—Yes.

2653. And that depends on the personality of the teacher?—To a very great extent. I am afraid that is inevitable.

*Sir C.T. Dyke
Acland.*

9 May, 1907.

2654. Then the training of teachers?—I suppose that is intended to refer to the training of teachers for elementary schools. One thing is obvious, that nature studies ought to be made an integral part of the work of all agricultural colleges and pupil-teachers' training centres. I do not say that that is done, but I think it is quite essential. I think in all training colleges, as far as it is possible, you should endeavour to get the students to appreciate the main principles of such sciences as affect agriculture and country life as you can get into the time that they have; but their time is extremely full, and I do not think that you ought to carry that instruction very far beyond what would in ordinary language be called a rather elementary stage; for two reasons, one, because if you carry it much further it entails considerably more effort on the mind, and the student is apt to think that he knows a great deal more of the science than he really does, and also this, which is more important, that he must stop the science of chemistry, or whatever science it may be, as soon as he leaves the training college, and he immediately begins to fall into the rear, as far as the science is concerned, if he has been carried on to an advanced stage. I do not think, therefore, that more than an elementary stage is really required for the purpose for which they have to learn it.

2655. What facilities exist in the various counties for the training of teachers?—There are training colleges—I cannot tell you exactly what they are—in the West of England. We have two training colleges in Devonshire, one diocesan and the other at Exeter, a day training college. The diocesan is a men's college, and the day training college at Exeter is mainly for women. At Truro there is a training college which I think is for women also. Then, of course we have under the County Council some pupil-teachers' centres.

2656. Your Society does not deal with that matter?—No; the Bath and West of England has nothing to do with that at all.

2657. Then the school gardens; what is your opinion with regard to those?—I have seen in some instances the school gardens very successfully carried out, but that again depends mainly upon the teacher. Where they can be carried out, and where the boys can devote some of their playtime to the cultivation of the garden, undoubtedly it is a very good thing for them; but I have heard the parents say that they can teach them gardening at home, and they would much rather they spent their time in the school hours in instruction of other kinds, and they do not think that the time which they give to the school ought to be wasted on what they can teach them at home. I do not say I agree with them, but that is the point of view some of the parents take.

2658. With regard to the experiments on farms, perhaps you will mention to the Committee the Seale Hayne Bequest, and what effect that has had upon it?—I may say that I know very little at present with regard to the Seale Hayne Bequest. I am speaking from the County Council point of view. Mr. Lambert is mainly responsible for the arrangements, and he has not been able to arrive at any decision as to where the site is to be, or as to how much money is to be devoted to the site, and indeed it is in a very elementary, not to say in a nebulous stage, at present.

2659. The Bequest is for the carrying out of experiments?—Yes. It is intended to establish a centre of agricultural instruction somewhere in the neighbourhood of Newton Abbot, near Exeter. That is practically all I know about it.

2660. Are there any local committees in the counties who arrange for those experiments?—For the experiments conducted under the County Council and the Bath and West of England?

2661. Yes.—No, I do not think there are. I think that the arrangements for the experiments now conducted in different parts of the county are entirely made by the agricultural sub-committee of the County Council. They are conducted by our peripatetic instructor. I am speaking with a certain amount of doubt, but I do not think there is any definite local committee.

2662. Are there any farmers' clubs who take an interest in it?—There is the County Agricultural Society, and there are various smaller local societies, but so far as I know they have nothing to do with the experiments.

2663. Then with regard to short winter courses, what is your opinion as to the usefulness of those?—I believe that something might be done in that direction either by the Seale Hayne Bequest or by arrangement with Exeter College. I think we might arrange for farmers' sons in

the county and in the adjacent counties attending short courses in special subjects at such a centre. I have heard of it being done in certain places, but I could not give you details. I believe, however, that they would be appreciated. I believe the farmers could spare their sons for five or six weeks, say, in the winter to go through a definite course of instruction at a centre not very far from their own homes. I think that might work, and I should like to see that started, but we have not the means at present to start it.

2664. You have not held any?—Not up to the present.

2665. Then with regard to research?—I have a view about that which I should like to put before the Committee. I think that the efforts of the Board of Agriculture ought, if I may venture to say ought, or at any rate might, in my opinion, be well devoted to the prosecution of research in as many centres in England as possible, with a view to the circumstances of the locality and the money available. That, I venture to think, is a special function, from that point of view, of the Board of Agriculture, and I should like to see it go further in that direction than it has at present done, but I think that the formation of the character and the development of the intellect of the agriculturist is the work of the Board of Education, and I want to see the two Boards working together on a line which would prepare the child, whether he be the son of a labourer or of a farmer, to train him to observe and reason, and so forth, and prepare him to take advantage of the work of the Board of Agriculture, to learn from the research which may be made and the illustrations of it which may be conducted in his neighbourhood. Therefore, I think we should have the two Boards doing good work all in one line, co-operating with each other. That is the picture that I have formed in my own eye of what I should like to see done. I think that is the best way in which they can work with each other. We at present in Devonshire, and I believe it is the case with other counties too, are a little bit confused as to the superintendence of the different things that we do. We have under the committee classes in thatching and hurdle-making and sheep shearing, and we have continuation schools where a certain amount of agricultural science is occasionally attempted to be taught; we have, of course, our dairy and farriery schools which I have mentioned, and we have had our agricultural side. All those have been definitely treated as instruction and education. Mr. Brooke-Hunt has done us very valuable service by coming to look over them, and very rightly too, because there are no agriculturally-trained inspectors under the Board of Education; but I venture to think the superintendence of those things and the spending of the money which was intended for instruction and given over to us for the purposes of education is a function of the Board of Education and not of the Board of Agriculture. That is a private view which perhaps I should not press on the Committee, but that is my opinion. I do not think that the Board of Education is in a position at present properly to inspect and control the expenditure of the money which is spent on such instruction as we can give of an agricultural kind.

2666. What you wish to see is that the Board of Agriculture should establish what we might call research stations to which farmers might send artificial manures or butter or anything which required analysis?—Yes.

2667. I think you have already said that you deprecate school farms and the teaching of agriculture in farm schools?—I do altogether, because either the education or the farming must go to the wall. The essence of farming, as I understand it, lies in attention to details, and strict economy and great experience and skill, and a variety of considerations which Lord Moreton at any rate knows very much better than I do. Those things are not education or instruction. The work of education is of a different sort altogether. I think, if you attend to the farm and make that pay, the school will have to go to the wall, and if you attend to the school and neglect the economy of the farm, then the farm will go to the wall. The combination of the two I do not believe to be economically possible.

2668. You have mentioned the schools at West Buckland and Ashburton?—As I have tried to explain, West Buckland is a very good secondary school, but not a good agricultural school, and it did not do any good to the farmers' sons in the way of agriculture. What it taught it taught them well, but not agriculture.

2669. Does that apply to Ashburton too?—Yes, I think it applied also to Ashburton. The farmers did send their sons there, but it did not flourish.

2670. I understand that you do not object to an experimental farm, as such, but you object to a combination of

*Sir C. T. Dyke
Acland.*

9 May, 1907.

an experimental farm with a school?—Yes, I think that is about it. But then I should say this about experimental farms, that what is true as the result of experiment of one farm is very likely, indeed probably, not true of its neighbour. What is true of a farm on one side of a valley, would probably not be true of a farm on the other side of the valley, and the same with the hills, and if you are experimenting you must be constantly moving from farm to farm.

2671. You are not in favour of experimental stations then?—No; I am not in favour of experimental stations.

2672. Although you are in favour of research stations, you are not in favour of demonstration stations?—Research is another matter, but I am not in favour of demonstration stations; I do not think you can spend money with any profit on continually demonstrating in one spot. Move your demonstrations all over the place, and interest as many farmers as you can by continually moving them about—that is my view.

2673. Then with regard to a scheme for the county, are you in favour of schemes, which, of course, ought to be very elastic, and ought to be based on the experience that has been already gained, being annually submitted to the Board of Agriculture?—I think that is quite a reasonable request from either of the Boards which supply us with funds, and intend to guide us in expending the money. I think that it would be quite a reasonable request that we should at the beginning of the year state what it is our intention to carry out during the ensuing year with the money we propose to spend. I think that is a perfectly reasonable demand; I think it will secure far more careful administration of the money, and will turn the attention of the Committees much more seriously to the whole subject, and I think it is a request that ought to be made.

2674. These schemes, you think, should be submitted to the Board of Education and the Board of Agriculture?—Yes, I think they ought to work together with reference to it.

2675. Can you give us a description of the arrangements that have been made in Devonshire by the County Council Agricultural Committee?—That is quite a recent development, and I am not quite certain that I can say that it is actually in force, but what is proposed has been proposed after consultation between the chairmen of some of the committees and Lord Fortescue, who is the Chairman of the Council. I am told that it is a similar arrangement to what has been carried out in some other counties. We have found it necessary, I should say to begin with, to establish a sort of general purposes committee of agriculture for agricultural subjects which come before the Council to be referred to. We have already had at work an agricultural sub-committee of our Education Committee, and what is proposed now is that the members of the Council who form the sub-committee of the Education Committee should form a committee for agricultural purposes, perhaps I ought to call it, and should report direct to the Council on all subjects which have anything to do with agriculture, but when they are dealing with education they will report to the General Education Committee, and their suggestions with reference to education would be under the supervision and under the control of the General Education Committee. Then I think it is proposed that for the general agricultural purposes committee they should be at liberty to co-opt other persons who would be on their committee for general purposes and would not be on their committee for purposes of education. I think that that ought to form a really valuable committee for general purposes.

2676. What is your opinion with regard to the system of the Board of Agriculture correspondents in counties?—I know so little about it that I hardly like to express an opinion—so little that I do not really know who the correspondents are in Devonshire. I ought to know, perhaps, but I have had no means of finding out, and if I wanted to go to any of the correspondents for any purpose I should not know to whom to go, and further I should not know how to find out except by referring to the Board of Agriculture itself. I do not think it is a very wise arrangement. I think the committee that we are proposing to have will be a very much more valuable means of communication with the farmers than the arrangement of correspondents is; in fact I do not know what the system is, but I have put my feeling before the Committee on that point.

2677. You have already stated that you are in favour of a central consultative committee consisting of representatives of societies for various areas over the whole country?—In London?

2678. Yes. Are you in favour of that?—Yes; the

only thing I wish to say is that it occurs to me that the Royal Agricultural Society of England ought to be able to furnish whatever that consultative committee can furnish; I should have thought that they were the natural body for reference.

2679. But you are in favour of a central body of representatives of societies in various areas which the Board of Agriculture would consult?—Yes. Though I referred to the Royal Agricultural Society of England, of course there are other societies, and it may very well be said that they ought each to have a representative on the central committee.

2680. With regard to inspection, have you any observation to offer to the Committee on that subject?—Do you mean the inspection of the expenditure—of the manner in which grants are expended?

2681. Yes.—I do not know that I can add much to what I said just now with regard to that. I think the Board of Agriculture would naturally have an inspector to visit any sites and to be in communication with any committees to which money has been devoted by that Board, and I think that the Board of Education again would naturally have inspectors for a similar purpose. But what I really wish to see is that the two Boards should put their heads together and arrange for a system such as I described just now, and arrange for inspection of the system. The whole subject is one which concerns both the Board of Agriculture and the Board of Education; it is almost impossible to cut a clear line between the two. I think the inspectors of the Board of Agriculture ought to have an *entrée* into the classes and institutions which are carried on for the purpose of instruction in agriculture, just as they ought to have in their own research stations.

2682. Your idea is that the inspection of the instruction for agricultural education should be carried on by inspectors of the Board of Agriculture?—No, not necessarily by the Board of Agriculture—not independently of the Board of Education. I want to see the whole thing treated as one under the officers of both the Boards; that is what I should like to see. I think from the very beginning, from the elementary school up to the research station, it ought to be looked upon as one subject to be dealt with both by the Board of Agriculture and by the Board of Education. I should have thought that they might have managed to work together, to have contributions for the purpose of education distributed by the Board of Education, the contributions for the purposes of research distributed by the Board of Agriculture, and the inspectors working together to see that the whole thing was done without waste.

2683. I quite understand that. I only mean, of course, you are in favour of a separate staff of inspectors of the Board of Agriculture, and a separate staff of inspectors of the Board of Education, working together?—Yes, that is what I want to see.

2684. What further development in the way of extension do you think at this moment ought to be given by the Board of Agriculture to agricultural education in the country? You, of course, have given considerable thought to that?—First of all I think they might institute some other stations of research in different parts of the country, and in connection with the stations of research I think they might encourage the farmers to consult scientific men, both for the purposes of analysis and advice, and so on, in connection with these research stations. I think that that could be done. I think that it would be a very wise policy on the part of the Board to encourage all the different local agricultural societies to conduct experiments managed by committees of their own, and guided and superintended by an inspector from the Board of Agriculture, and that these societies might be assisted with moderate grants to conduct experiments of their own, with a very free choice under proper guidance, of the different objects of the experiments. I do not think, for practical purposes of agriculture, the Board of Agriculture could do a more wise thing than to cultivate among the farmers that spirit of experiment and observation. That would be, in my opinion, a very valuable function, and so far as I know it is not at present attempted beyond the borders of the large societies that are well known, but I think it might be done in every county society.

2685. Your experience is that farmers now quite appreciate all the efforts in that direction?—The farmers would appreciate it, I think.

2686. Your experience has shown that development can best be directed in the direction of research work and the carrying out of experiments at different centres, because the farmers can better understand the practical

Sir C.T. Dyke
Acland.

9 May, 1907

value of those?—Certainly. A great advance has been made, since we started our experimental stations in Devonshire, by the farmers, and the instructor tells me that he has constantly considerable groups of farmers round him when he pays his periodical visits to these stations. That advance, as far as I can judge, is entirely owing to the institution of those stations and shows the great value of that kind of work.

2687. The farmers value his advice?—Yes, and they come and talk to him. I should say, we supply the manures for the experimental stations. The farmer himself, with the instructor, superintends of course the distribution of the manures and all that. I would not for a moment advocate the spending of money in manures to be supplied all over the place and applied indiscriminately. I do not want any wasteful expenditure of that kind, but I am sure any useful encouragement that could be given in the direction of those experiments would be extremely wise, and very useful. I am very sanguine about that.

2688. (By Lord Barnard.) I gather, Sir Thomas, from what you have told Lord Reay, that you approve very highly of research and think it very useful?—Yes; I think it is necessary.

2689. Are you aware that in many of the University agricultural departments research and instruction are carried on together?—Yes.

2690. Would you agree with me if I were to suggest that research and instruction were almost inseparable?—I do not think I should say that—I mean research can go on independently of instruction quite well, and instruction can go on without research, at least I should have thought so.

2691. I gather that you are of opinion that farmers should be encouraged to take advantage of the results of research?—Certainly.

2692. And that practically that is beginning to become the practice in the county of Devon in your district?—I hope so, and I hope all over the country too. The object of the Bath and West of England Society, as I said just now, has been to spread the results of research as well as we can do it by illustration, the illustration being to show the farmers that the thing has taken place, with the hope that they will carry the thing further themselves.

2693. I also gather that you draw, and I agree with you, if I may be permitted to say so, a very sharp line between education and instruction?—Yes.

2694. That is to say, you consider the foundation of education is to form the character and broaden the mind and intelligence, and so on of the student?—Yes.

2695. For that purpose you think an ordinary education is better than a special education?—I am inclined to defer specialisation to the last moment compatible with the career of the individual.

2696. You do not deprecate specialisation, say in University centres, of course?—No, I do not; certainly not under proper conditions.

2697. You have no University centre in the West of England, I think, which has any special department for agricultural instruction?—No, I think not.

2698. Would you think it would be a good thing if you had one?—You said for agricultural instruction.

2699. Well, higher agricultural instruction?—I do not agree with agricultural instruction, so to speak, from a University point of view. I do not think you can teach farming in that way; you can teach the science of farming, but you cannot teach farming.

2700. You have expressed it better than I did. That is really what I meant—the science connected with farming. If the science connected with farming is to continue to develop you must have instruction where such development can be carried on—where teachers can be trained, for example?—Yes, where teachers can be trained, and where scientific men can carry out research—yes, that I agree with very strongly.

2701. I suppose you are aware that in the Universities of Scotland there are a great many young men who take up the agricultural side and take degrees?—Yes.

2702. Do you not think that the system could be equally well applied all over England?—The Scotch farmer and the English farmer are very different creatures. I believe the Scotchman thinks a great deal more of that kind of requirement—a diploma, and so forth—than the English farmer at present does. It is possible that you might get an English farmer to take that line more than

he does at present. At present his great anxiety is to get his boy back to the farm as soon as he can and teach him the practice of farming. As far as my experience goes he does not hold much by the specialised instruction off the farm. That is my experience. I do not say whether it is right or wrong, but that is their view.

2703. He is beginning to appreciate more and more the advantages which can be obtained from science in connection with his industry?—That lies at the back of my suggestion that the research stations should be multiplied. I think the more research stations are multiplied about the country, the more the farmers will begin to see actually what science means, and therefore they would be anxious for their boys to get whatever benefit they could from seeing the results of science achieved before their eyes.

2704. You will agree with me that the opinion of the farming classes is changing and developing in that respect?—Certainly.

2705. And that we must not regard the present position as final at all?—No.

2706. We must go on?—Yes.

2707. I should like to ask you a question with regard to your suggestion that the Board of Agriculture and the Board of Education should co-operate. I know you have had great experience with regard to departments, Sir Thomas. Do you think that two departments could work together conveniently?—I should have thought they might. I should have thought that for that purpose you might have let your inspectors of education and your inspectors of agriculture consult together and with the sanction of their superiors carry out some definite scheme of inspection, of general superintendence. I should have thought that was possible.

2708. You are in favour then of the further development of the Government control, we will call it, of the research work to which you specially allude—that it should be taken up more by the central department of the Government, or at any rate that the initiation of it should be left to the central department of the Government, and that it should not be left to the counties to do it?—Research work you are speaking of?

2709. Yes?—If you want to develop it, I think you will have to resort to some extent to the Imperial Exchequer, and of course whenever that takes place, you must have Government control.

2710. I suppose you are not of opinion that this £10,500 which was granted last year by the Board of Agriculture was entirely useless?—Not useless, I should like to see it doubled. We must be thankful for small mercies, that is all.

2711. I was very much interested in your remarks about the Board of Agriculture Correspondents. You do think that the system of the Board of Agriculture being locally in touch with each county as a unit is of value although you do not, perhaps, approve of the actual system of individual correspondents?—I do not quite understand what the intention of the Board in instituting the correspondents was, but as far as I know it has not had very much fruit in the counties that I know.

2712. That is my experience also. I was wondering whether you could suggest—I think you did suggest to the Chairman, in fact, that you thought that that system might be further developed by having some sort of local committee in each county?—We have got a County Council elected for the general business of the county, and I cannot help thinking if we have a kind of general agricultural purposes committee on the County Council that the Board of Agriculture might do a good deal through that committee. It might ask that committee to collect information for it; it might ask that committee to superintend the expenditure of funds; it might ask that committee to inform the Board whether any special development or any special needs existed in the county. It seems to me that that is the only possible channel of communication.

2713. I am speaking from my experience, of course, of my own county. In my county—the county of Durham—although there is a considerable amount of farming, agriculture is entirely overshadowed by mining and other industrial pursuits. Do you think that such a system would be suitable in such a county?—That is a thing that I, not living in Durham but living at the other end of England, should not like to say.

2714. In our last County Council—I do not know about the present one—we had only two persons out of the whole number who were in any way associated directly or indirectly with agriculture?—With reference to Durham

Sir C. T. Dyke I do not care to express an opinion, but with regard to Devon and Somerset, and the adjacent counties, I am prepared to do so.
Acland:
 9 May, 1907.

2715. You consider the Royal Agricultural Society might be a type of a good central information and intelligence department?—It is a great society covering the whole country, and I think that would be a very natural source of reference for the Board, and that is the object of the proposed consultative committee, I understand.

2716. You would not object to the Central Chamber of Agriculture, I suppose, being associated with that committee?—No, if any body of that kind is contemplated perhaps it would be wise to elect upon it representatives of all the leading societies interested in agriculture.

2717. (*By Mr. Acland.*) I notice from the return which we have here from the Board of Agriculture, that last year Devonshire spent about one-sixth of its "whisky money" on agricultural education, Cornwall a third, Somersetshire a fifth, and Dorsetshire and Wiltshire about one-fourth. Devonshire comes in considerably lower than any of the West of England counties. Is there any special reason in Devonshire which has made the proportion of the "whisky money" spent on education comparatively small. Is there a feeling against it in the county?—No, I do not think there is.

2718. Do you have special demands in Devonshire for secondary education, pure and simple—very heavy demands for aiding the secondary schools which would rather pinch the agricultural education?—We have recently developed and passed through the Council a scheme which ought to eventually produce five or six good secondary schools which will be available for the sons and daughters of rural and urban communities, and we so far are of opinion that we may not require more than a half-penny rate for that purpose, but the County Council does not like that half-penny rate. It was given, but it was given, if I may say so, with rather a bad grace. The scheme was once thrown back and on that occasion it was thrown back, I think, mainly because we proposed to take away the sum of £150, which was spent in prizes for the students of our dairy school. We thought the expenditure a wasteful one, and we endeavoured to retrench in that respect, but the Council would not have it at any cost, and as that was the feature of our scheme, they sent the scheme back and delayed it by a year. However, the grant is insisted upon by the Council, and now the scheme has gone through.

2719. I gather there is a very great pressure and a great number of demands on your money available for education other than elementary?—Yes, but there is not any great feeling against one part of that expenditure, rather than another, by the ratepayers.

2720. May I put it in another way: is the increasing pressure on this education money which has grown in the last few years developed particularly with regard to agricultural education, or to put it in this way, farmers having to pay a big new elementary rate, have they complained that so much money is going for agricultural education?—No, I do not think they have. There has been no complaint about money being devoted to agricultural education. I think that some persons not interested in agriculture have been inclined to think that a certain amount of money which has been devoted to such things as agricultural processes has been rather wastefully conducted. It has been often said we do not get the proper class of persons to go to these classes. It has often been said that the money goes into the hands of skilled thatchers and sheep shearers, and so on, and does not help the farmers, but I think the farmers themselves value these courses a great deal, and I should say the pressure is more in the direction, from the farmers, at any rate, of our spending more money for agricultural purposes than the other way. I should say the Council was generally in sympathy with expenditure on agricultural education.

2721. May I take it that if you had more money generally available you would not anticipate strong opposition in the county to spending the same sort of proportion as you at present spend on agriculture for that purpose in the future?—No, I think not.

2722. If you had more money, what is the chief purpose for which you would wish to use it in order to do work which would be appreciated by the farmers—research?—I am afraid that question has taken me rather by surprise, as it has been such an extremely improbable contingency that I had not thought about it. But I think that research and experiments are the most useful directions for expenditure.

2723. You would be inclined to spend money on research

and experiments rather than on itinerant lecturers, or on permanent courses at a permanent centre?—I think, if there was a good permanent centre, that the encouragement of those short courses that I spoke of would be well worth attempting. I cannot say that it would succeed, but my impression is that it would.

2724. You think although those short courses would probably succeed that there would be no demand, or no demand worth supplying, for anything more than short courses?—I do not know that I could put it so strongly as that, but I am not very sanguine that the farmers would send their sons away after the secondary school stage is past for any long period; I do not think they would. My impression is that in Devonshire and Somersetshire and Cornwall at present there is not much inclination in that direction, I think, and the money would very likely be wasted for some years.

2725. Yet you said there had been in the past considerable pressure that you should establish a permanent college?—Yes.

2726. From whom did that pressure come?—Newspapers! We did not find that there was anything real at the back of it. We did our best to find out, and I think the whole committee were convinced that there was nothing in it really. I think I am perfectly accurate in saying that it was much more newspapers than anything else.

2727. I noticed yesterday, when we had evidence from the Dairy Farmers' Institute at Reading that they told us that a considerable number of students had come to their Institute from the western counties. Do you think that young farmers have gone from the western counties to other centres or institutions in any large numbers?—For instruction do you mean?

2728. Yes, for instruction?—Not so far as I know; I am absolutely unaware of any. I do not say there are none, I only say I do not know of them.

2729. You do not think that the deficiency of such institutions in the west is made up by their existence in other parts of England—from the point of view of the west?—I do not wish in any way to discourage the foundation and development of the Seale Hayne College at all. I think, under careful consideration and wise guidance, that a very valuable institution may be erected.

2730. You think, considering that you have money available you could spend it in better ways than that?—I think we could spend our present money in better ways. I should be loth to set up an institution with the money we have in our hands. We have far more to do with it than we can conveniently do.

2731. I suppose you think, from the point of view of research, that there is a great deal that can be discovered by working away year after year at one place?—On the lines on which such institutions have been carried on?

2732. As at Garforth, near Leeds, with regard to the manures and cropping and deterioration and so on?—Yes. I have no doubt that research of that kind is very necessary and very beneficial, but I do not say that research must be confined to that kind of thing.

2733. Again, you would say you could find more useful things to spend your money on than in that kind of research?—I think we spend our money in Devonshire a good deal better in the interests of farmers in affording them the means of apprehending the stage that research has already arrived at than we should by devoting our money to the purposes of research, because, as far as my experience goes, research cannot be carried on without very heavy expenditure, and our money does not admit of it.

2734. The research which you favour is rather educational research than research which is slowly and laboriously going to add a little mite to agricultural knowledge. It is the educational research that you have mainly in view?—I rather distinguish between education and research—I tried to just now. My view is that research is one thing and education is another, and that you cannot quite combine the two.

2735. I mean demonstration.—That I am quite in favour of. I think that is part of the educational object that I think we ought to devote ourselves to, not original research. Original research is one thing and the illustration of the results of original research is another, and that is the thing that I believe our committee ought to take up.

2736. You spoke of the labourers. Is there any complaint as to the want of skill or aptitude on the part of young labourers in the West of England?—That is rather a difficult question. I constantly hear it said that we never

2720a

find any of the fine old labourers that we inherited, and we do not see any new ones coming to take their place, and I occasionally hear farmers say that they are hard up for labour. I think there is some truth in that, though I am inclined to believe that there are labourers to be had if a farmer exerts himself in the right way to get them. I am not very despondent about that. I think that the old hands among the labourers are somewhat averse to encouraging the learning of their arts by the young hands. That has been my experience. I mean a thatcher, for instance, will be very unwilling indeed to train a young thatcher, although the thatching trade has nearly gone out. A hurdle-maker again—I will not say he will not do it if he is paid for it, but it is very difficult to get that well taken up and carried out.

2737. If you had more means, could you do more than you do for the education of the labourer?—In that kind of skill?

2738. Yes. You have evening schools, and you have classes in agricultural processes?—Yes.

2739. Do you think there is anything more that you could do to get hold of the labourer?—I think farmers would be glad to see expenditure of that kind if it could be done practically, and the money not wasted. It requires a great deal of strict superintendence, personal interest and contact with the actual work. I know of no channel through which our money has flowed in which it has been so difficult to prevent waste; but I think it is well worth doing.

2740. You think it is well worth doing?—Very well worth doing if it can be done, only it must be done with considerable care.

2741. In advising the setting up of a consultative committee, putting apart the question of the composition of that committee, had you in mind a body similar in functions to the consultative committee of the Board of Education?—Yes, I think I had.

2742. An advisory, but not an administrative body?—Yes.

2743. Distinctly not administrative?—Distinctly not responsible for administration.

2744. Yes. You were asked how the Board of Agriculture could, by additional expenditure, encourage farmers to take interest in the results of science. Have you considered whether the Board of Agriculture could directly do anything at the larger shows in the country, such as the Bath and West of England Show, by having stands and lecturing on the results of experiments during the year, and that kind of thing?—I do not think that a show yard is a very good place for a lecture. That is my experience. They do take place, but I do not think the farmers get a great deal from them. This is my view rather: it may be a one-sided view. I do not mean to say that where you have got a dairy school as we have at work that a good dairy lecturer may not, with an audience collected for the express purpose of hearing him on a particular subject, give a very interesting and instructive lecture, but I think, as I said before, a show yard is not a very good place in which to have a lecture.

2745. You do not think the Board of Agriculture could usefully do more than they now do in connection with shows?—There is one thing I should like to see, if it was possible for the Board of Agriculture to do, and that is, if they had in their possession what they could lend to shows, such things as diagrams or specimens, or models of such things as injurious insects, the various ways of treating timber, and many other such subjects that would occur to us. I think if they could lend diagrams of that kind to societies who could exhibit them for a short time, it might stimulate interest which would lead to subsequent inquiries. It would not be a very expensive thing to do, and I think it might be very useful.

2746. (By Mr. Staveley-Hill.) With regard to the veterinary classes which you spoke of—and I was sorry to hear you say they were not a success—were the lecturers or instructors that you had in veterinary science members of the veterinary profession in your neighbourhood?—He was a member of the Veterinary College, I think.

2747. Did you find any difficulty or disinclination on the part of the veterinary profession to give these lectures or instruction?—Any unwillingness do you mean on their part?

2748. Yes?—No.

2749. Were those classes well attended?—They varied very much indeed; it is almost impossible to tell. There were some places where, on market day, you would get a

room full, and there were other places where, on market days, you would not get one. It was almost impossible for us to foresee. I think they were of some value, but I doubt whether they justified the cost. On the whole, we came to the conclusion they did not.

2750. Was the result the same in all the three counties that you have named?—No, I only speak with any certainty of Devonshire. I have not been in connection with the committees of either Somerset or Cornwall.

2751. (By Lord Merton.) As regards the consultative committee, of which we have heard a good deal this morning, would you mind telling me exactly what you think it ought to do. Could you imagine an instance where it would be appealed to. I want to get at what your idea is as to the scope of its work. I do not feel that I quite understand what it would have to do. Supposing there was a consultative committee in existence now, Sir Thomas, in the City of London, and that your county of Devon had a subject that they wanted to put before it, what sort of subject would that be—what sort of questions would come up?—I have not thought that out very much, but it occurs to me that a body of that kind might give valuable advice, or might help in getting information at any rate for such a thing as the regulations about diseases, and work of that kind. They might give an opinion to the Board as to how such regulations are working, or what modifications are required, and so on. I do not say that is a very essential thing, but that is the sort of thing.

2752. You spoke about giving information to the Board. I rather gathered at first that the object of the consultative committee was not so much to benefit, if I may say so, the Board of Agriculture, but as setting up a body that might be of use to county associations or county societies, and I was rather thinking that the primary object would be in helping rural work?—Helping rural work?

2753. Well, county work—rural work—or is it simply a go-between between the Board of Agriculture and the counties?—That is what I thought was intended—a kind of go-between between the Board of Agriculture and the people in the rural districts.

2754. In your opinion it would be better to set up such a body rather than to get the Board of Agriculture into closer contact and touch directly with the districts?—I do not see how the Board can get in touch except through its inspectors. As I have already told the Committee, I do not know how the system of correspondents works; I do not know who they are even in my own district.

2755. Nor do I.—And so far as I am concerned, the system does not exist; I know nothing of it, and if anything of the kind is contemplated I should have thought that some kind of committee such as was described, consisting of representatives of the various institutions, would have been a very good way to arrive at it.

2756. I should like to ask one or two questions about the farriery, and veterinary instruction. I think you said the farriery instruction was appreciated?—Very much indeed.

2757. Do you think it has left permanent benefits behind?—Oh, yes. After the farriery school had been through a district, I have often been told by the farmers they were extremely grateful for it—I mean in this sort of way, that it prevented their horses being damaged, because the smiths had been well trained.

2758. Did you find any professional jealousy against it?—No, we never found any at all.

2759. To go to veterinary instruction, it is very curious what you tell us, that in certain districts on certain days the lectures are dead failures, whereas in other districts they were great successes?—Yes.

2760. May I ask if the same lecturer experienced success one day and failure another?—Yes, the same lecturer; it was quite a mystery to us.

2761. I suppose there was no professional jealousy coming in?—Of course, that might have taken place without our knowing it. It was very astonishing to us to see how very much the different districts, and not very far from each other, varied in that respect.

2762. (By Mr. Latham.) I think we may fairly take it for granted, looking at the map yonder, that the Bath and West of England Society has done as much as was possible to be done in scientific education, considering that there was no college in their district?—I think that the Bath and West of England has done all that it could to promote the instruction of farmers in its district, but there could be no college that would cover the whole district of the

Sir C. T. Dyke
Acland.

9 May, 1907.

Sir C.T. Dyke
Acland.

9 May, 1907.

Bath and West, because you know it takes in the Southern counties as well. It has never been in relation to any particular college.

2763. We know what a very great stride the dairying industry has made in the West?—Yes.

2764. Possibly greater than in any other part of England. Is not that almost entirely in consequence of the action of the Bath and West of England Society?—Yes, certainly.

2765. Going back to the cheese schools, that is almost entirely the work of the Bath and West of England Society?—Quite.

2766. You said the cheese schools were located for two or three years in one district?—Yes.

2767. They have done an immense deal of good in trying to find out certain soils which were very injurious to cheese-making?—Yes, I think Professor Lloyd, who has been working with them, has been carrying on a very careful investigation of all the circumstances that affect the making of cheese, and I think he has arrived at some valuable results.

2768. The results of those enquiries and this teaching are published in the Journal of the Society?—Yes.

2769. Those go out broadcast and do an immense deal of good?—Yes.

2770. I should like just to say with regard to the shoeing classes, because I am steward of the department, they have done a great deal of good?—Yes, an immense deal of good.

2771. Not only confined to your own district, but it has gone through Wales and different parts?—That is so. May I add that the Cider Institute has its origin, I believe, in some of the things that were going on under the auspices of the Bath and West of England?

2772. With regard to the scholarships that used to be offered, were they offered by the Bath and West of England Society?—No, not in my time. I do not think I remember any scholarships being offered by that Society.

2773. That is my experience also, but I was rather under the impression that you did say that you offered scholarships, and I thought you must be alluding to the County Councils?—Yes, I was alluding to the County Councils. Perhaps I did not make that clear. I do not remember the Bath and West of England ever having offered a scholarship, and I have been connected with them for many years.

2774. You say sometimes the lectures were very successful, and sometimes they were not successful?—That is so.

2775. Were they always on the same subject when they were successful?—Yes, that is what I meant; I was thinking then of the veterinary lectures. I forget now what the subject was—I am afraid I cannot recall it—but there was a course of lectures by a qualified member of the veterinary college that was very much appreciated in some places; but, as I said, we had class after class in different subjects, and the results never could be foreseen.

2776. We know well enough that the travelling dairy in the Bath and West of England is almost a national institution, is not it?—The travelling dairy has been started some 20 years, and has been at work with increasing appreciation the whole time. There never has been a time during which the work of the travelling dairy school has not been bespoken months in advance.

2777. I think you said just now that there was a little feeling in the County Council that possibly the money allocated there for prizes was not for a good object?—We thought it was very wasteful. Our experience led us to believe that the dairy school would be no worse if those prizes were discontinued.

2778. You are well aware that the students who came to the competitions came from all over England?—I believe they did.

2779. And that the good teaching that was given there was very much appreciated by the dairy world?—Very much. I suppose most of the students were local.

2780. I think not?—That I cannot say.

2781. Do you think farmers' sons can be taught better scientifically in these various colleges, or whether they can be taught possibly in a better way in the way of making a living in their own occupations?—I am afraid that is a subject on which I can only speak theoretically and not practically, because I have had no sons to educate myself; but if I was a farmer, or had to advise a farmer, my views would be to keep the boy's education and instruction as wide and as broad, but as unspecialised, as possible, until he was at least 16; but I think after 16, if his father

can spare him, that another year or two would not be wastefully spent at some special agricultural college or set of classes. But I am very anxious indeed that the specialisation should be postponed to the latest possible moment. I do not mean to say that a boy cannot be usefully taught the elements of some science, or more than one—two or three sciences. I think it would be very much to his advantage that he should learn the elements of some sciences before he goes out to work on the farm.

2782. With regard to the experiments that have been conducted, I know they have not been very large, but they have been very successful?—Yes, certainly.

2783. They have always been carried out with the idea of being practical?—Most decidedly.

2784. You made a remark just now that the difference in soils is so great on different sides of the valley that it is almost impossible to teach on one united line?—What I meant by that was that the conclusions which you may derive from an experiment carried on upon a farm on one side of a valley might be very erroneous for the guidance of a farmer on the other side of the valley. As you know, the aspect, the shelter, the soil, the command of water, and all sorts of things are different upon every farm, and therefore a farmer has to think for himself whether he can really infer from what he sees on another farm, that what answers there will answer on his own.

2785. I think you also agree that the research that is likely to be propagated by the colleges and institutions is of a very different character from what had been started by the Bath and West of England Society?—Yes; the Bath and West of England Society's experiments, except in reference to the operations of Professor Lloyd with reference to cider and cheese, have never been in the direction of original research.

2786. With regard to the cider, the Bath and West of England Society were premiers in making any organised attempt to deal with that by the aid of scientific education?—Yes.

2787. I was very disappointed to hear the remarks about the Board of Agriculture Correspondents. I am a Correspondent myself, and although I should not like to say they do the thing any better in Oxfordshire than in other places, still I always try to do the best I can, and possibly they do the same, and I have found the system has been of great use?—I cannot say the same in our case.

2788. You are supported by Lord Moreton and Lord Barnard, so you are not alone in your experience, but we always think they are useful?—I will not say they are useless, but I have not found out their use yet.

2789. You made a very strong recommendation, one that I very much agree with, that the Board of Agriculture might do a great deal more for our local agricultural shows?—I think so.

2790. Would you tell us in what way you would suggest that the Board of Agriculture could be useful in that respect?—As I said just now, I think they might encourage local societies to take up experiments, and they might superintend the experiments and guide them and develop them.

2791. To go back to Lord Moreton's question as to a consultative committee, would not that be the very thing that would be useful to the societies to send up their returns to?—Yes, I think certainly when constituted it would be of the very greatest use in advising the Board how it could best work with those local societies; that is one of the subjects on which they would do good.

2792. Do not you think it would be very useful in all the large shows if the Board of Agriculture would endeavour to assist such a side as they have at the Royal, with regard to research in the different values of manures and soils? I think that is most instructive, and one of the best sides to agriculture?—Yes, I can conceive directions in which the Board of Agriculture might do a great deal to stimulate interest in the study of agriculture through the means of these county societies.

2793. I know the Royal Agricultural Society has done an immense amount of good to us, and the Board of Agriculture would be exceedingly useful also if they would take that matter up, and it would be money well spent?—I think so.

2794. Now, with regard to labourers, it is possible that the reports sent in from Devon and Somerset show that there has been a great deal done for labourers in those two counties?—Yes, in the way of instruction.

2795. Yes, in the way of instruction. We have done a good deal for them, no doubt, and it has done good?—Yes, I

think it has done good, and I should like to see more done; but I am bound to say I am not prepared with any suggestion as to how more can be done; it is a very difficult subject.

2796. I am aware of that. Do you get a superior man in your district to be your instructor?—In some cases, yes. I have seen some very good instructors who are old hands, good old labourers; but sometimes you cannot get them to do it.

2797. I quite agree. I think the great success of the farriery school was, we always had a registered shoeing smith to be the shoeing instructor—a man after their own heart?—Yes.

2798. Does that apply to the sheep-shearing and hedge-trimming and rick-building, and so on?—There is no analogous institution.

2799. I quite agree; but in the districts of all agricultural societies they have prizes for ploughing, and rick-building and sheep-shearing, and that sort of thing?—We have done that.

2800. Do the champions of these several societies teach the men?—I do not think they do much.

2801. The great secret of the failure, in all probability, is that too high a class of man is engaged to teach. I know men of agricultural pursuits are very much against being taught by men who do not know what they are teaching about?—That is very true, but there are two sides to that. A man may be a first-rate workman and a very bad teacher.

2802. I quite agree.—Of course, if the Board of Agriculture were able to take such a subject as that in hand a good deal might be done in the way of getting good workmen to teach. I do not know how far that could be done. I have never considered the subject, but it would be a very good thing if it could be done. I do not know whether it can.

2803. Lastly, it is quite fair to say that should the Board of Agriculture feel inclined to spend some more money on agriculture, there is ample room for it to be done?—Ample.

2804. (*By Dr. Somerville.*) With regard to the Agricultural Correspondents of the Board who were appointed to keep the Board informed of the requirements of local authorities as regards various things, amongst other things as regards education, might I ask whether you are acquainted with a volume that is issued annually, which gives an account of the proceedings of the Board in what is called the Intelligence Division. Do you know this annual publication?—I do not think I do. May I look at it?

2805. Certainly. (*Handling volume.*) In the appendix, annually issued, there is a list of all the Agricultural Correspondents?—I do not think I have seen this volume before, as far as I know: I do not think I have come across it.

2806. Are you aware that a list of the Agricultural Correspondents of the Board is exposed in every rural post office in the United Kingdom?—I did not know it.

2807. That is an arrangement which the Board of Agriculture made with the concurrence of the Post Office, and in every rural post office, I believe, in the United Kingdom, the names of the correspondents are exhibited?—I was not aware of it. May I, in connection with that, venture to make a suggestion? I do not think what I am going to suggest has been done, but I think the Board might usefully send to every post office a certain number of copies of its leaflets, and request the postmaster to keep a list of those leaflets accessible, and the names of the last few posted in its window.

2808. By permission of the Chairman I am allowed to ask you whether, in your opinion, instruction in forestry might be developed in the south west of England?—I hardly know quite what kind of instruction in forestry you are contemplating. I can hardly give an answer to the question.

2809. In the north of England, in connection with the centre at Newcastle, and in the north of Wales, in connection with the University College at Bangor, there have been appointed, with the support of the Board of Agriculture, expert foresters, and the duties of these men are to give instruction to woodmen and others interested in forestry at local centres, and their services are available as regards advice for anyone who has woods, the advice not being given for nothing, but for a comparatively small fee. Do you think that the woodland owners in Devon would take advantage of such expert advice if it were thoroughly sound

and thoroughly in conformity with local conditions, if facilities were given for the obtaining of such advice?—I should hardly like to say. I know that Lord Fortescue has recently had his woods reported upon, and a very valuable report was given to him; but I do not think it was done by one of the Board's men, as far as I know.

2810. That was done by Professor Fisher of Oxford?—That was not one of the persons to whom you allude?

2811. No?—I could not venture to give an opinion as to what the large landowners would do. I think foresters are appointed for most of the woods in the hands of large landowners. One landowner, who is possessed of more of that kind of land than anybody else in his county, has an extremely able forester of his own, but I doubt whether they would generally be much appreciated.

2812. (*By Mr. Medd.*) In regard to the future relationship of the Board of Agriculture to the Board of Education, you desire, of course, to see complete co-operation between the two Boards?—Yes; I think it is extremely important.

2813. You do not suggest that the educational work of the Board of Agriculture should be wholly transferred to the Board of Education?—No. As I tried to explain just now, I think it ought to be regarded as one whole—from the elementary school up to the research station—and I want the two Boards to take interest in it.

2814. You might put it in this way, perhaps, that the Board of Education should be primarily responsible for all that comes under the head of general education; that is to say, all the work done in elementary and secondary schools and the training colleges. The Board of Education would be responsible for that?—It seems naturally so.

2815. And the Board of Agriculture, on the other hand, would be primarily responsible for all technical instruction bearing on the industry of agriculture as given in agricultural schools and colleges, the two Boards working in union with regard to the supervision and inspection, but the Board of Agriculture being primarily responsible for the technical and industrial training, the Board of Education for the educational work?—Yes, I think I should say so.

2816. With regard to this report, it had not come under your notice before. (*Handling volume*)?—No.

2817. That report does not concern any question which comes within the scope of this enquiry; it does not deal in the least with educational matters, and therefore it is not to be wondered at that you have not come in contact with the Correspondents. The Correspondents, the names of whom are given in that Report appear to be wholly concerned with purely agricultural and not educational matters?—Yes.

2818. Can you suggest any way in which the literature of the Board of Agriculture might be made more accessible to those interested in it?—I should like to see it sent to the post offices throughout the rural districts.

2819. The literature itself sent to the post offices?—Yes. I think all the literature which is distributed gratis by the Board should be sent out to every rural post office in the country.

2820. All the pamphlets and leaflets?—Yes; and not only that they should be accessible there, but that their accessibility should be made well known.

2821. You are Chairman of the Devon Education Committee and you have various other appointments, and yet you find some difficulty in ascertaining what is issued by the Board of Agriculture in the way of literature?—The Board very kindly send me most of their leaflets.

2822. They do not appear to have sent you that Report?—I do not remember to have seen it.

2823. Unless you apply for it the literature is not brought to the doors either of the farmer or of the labourer under the present system. They have to apply for it?—That is so.

2824. In other countries there is a wide distribution of literature, which is made accessible to people interested in the cultivation of the soil, is not that so?—Yes, and I think more might be done in our own country.

2825. With regard to the disinclination of Devon to establish an agricultural college probably the idea to establish one was suggested after the establishment of the present existing colleges. Do you remember when the idea was mentioned?—The unwillingness was to establishing a college out of the "whisky money"; we simply had not got the money to do it.

2826. Exactly, that is what I was going to say. In the case of the other colleges they enjoy endowments, or they

Sir C.T. Dyke
Acland.

9 May, 1907

Sir C.T. Dyke
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9 May, 1907.

are directly connected with a university, and no county to-day could afford the capital expenditure to have one of their own?—We certainly could not.

2827. And no other county could. Of course, in the remarks you have made, you do not wish to disparage, in any way, the Seale Hayne Bequest?—Not in the least. I think I may say that our committee look forward to that as an extremely useful thing, and we are very anxious that the scheme should be carefully thought out, and we shall do our best to develop it.

2828. In other words, if a county enjoys a large bequest or endowment, and can thereby establish an agricultural college, it would be a benefit for agricultural research and education to that locality?—When you say an agricultural college, I suppose I must admit that phrase on the whole, although I am not sanguine that the farmers will send their sons for any long time away from their farms after their school days—I am not sanguine about that.

2829. That depends upon the growth of opinion. They have succeeded in Denmark, for instance. It also depends on various social and economic circumstances which may alter in time, and there is no serious reason why what succeeds elsewhere may not succeed here. It only requires time?—There is no reason why it should not. Of course, the supply may create the demand; I cannot say.

2830. With regard to the suggested consultative committee, its duties and functions would be analogous to those of the similar bodies connected with the department in Ireland and the Ministries of Agriculture, say, in France and Holland. It would be an advisory committee, and it would consolidate agricultural opinion, and bring pressure to bear upon the Board concerned with agricultural interests?—It occurs to me it might be a most useful instrument in that way.

2831. You were a member of the Executive Committee of the Agricultural Education Committee?—Yes.

2832. The views which you have expressed here to-day in regard to the co-operation between the two Boards, and the need for larger funds, and an increase in the inspectorate and the distribution of literature, and the appointment of a consultative committee, were embodied in resolutions passed by that Executive Committee some years ago?—Yes, I think so.

2833. Those resolutions * still remain a practicable policy in regard to agricultural education?—Yes, with the exception of No. 5.

2834. With regard to the training of teachers, you have no facilities at all in Devon for the training of existing teachers?—You mean special agricultural instruction?

2835. Yes, the training of them in agricultural subjects. You have not started short courses for them?—No, but we have had some Saturday classes.

2836. They are not mentioned in this Report of the Board. You have had them?—Yes, we have had them in past years to which teachers could go.

2837. They are not being held now?—No, they have been discontinued. I do not think there are any classes included in this year's scheme; but there have been some to which teachers were encouraged to go.

2838. You are aware, are you not, that a third year's course of training may be had by an acting teacher at agricultural or horticultural institutions?—I have heard that, but I did not know it until yesterday.

2839. And arrangements are now being made at Wye for males, and at Swanley for females, to enable them to get such a third year's course of training. Are you aware of that?—I am a little sceptical about the usefulness of it. I do not think the teachers in the elementary schools could do very much in the way of what could be

really called agricultural instruction. I am very anxious now to see them well taught in nature study and the art of encouraging nature study among the children; but I do not think I want to see the elementary teachers, either male or female, carried on beyond that.

2840. You have not seen the schemes suggested for them at these institutions, have you?—No, I have not; but I know this, that the curriculum in training colleges is so extremely full now that I cannot believe you will, with much usefulness, add an advanced study of science of any kind to their present curriculum.

2841. This training would not be, of course, at the training college, but would be at the agricultural or horticultural institution?—Quite so, but as I understand it, it is to be carrying to a rather advanced stage their instruction in agriculture and horticulture.

2842. No. I may mention that the specific subjects of horticulture and agriculture are absolutely excluded. The whole scheme is devoted to what you rightly term nature study, that is to say, the study of plant and animal and insect life?—I could not say a word against that, certainly; I am very anxious to see that carried out.

2843. I was at the Board of Education the other day in reference to it when the Principal of Wye discussed a scheme, and that is exclusively the subject. With that you would agree?—I quite agree that I want to see that taken up, but it occurred to me when I heard it spoken of yesterday at the meeting of the County Councils' Association, I do not see where the money is going to come from. It may come from the Government to a certain extent.

2844. The Government is a party—But at present the cost of the training colleges is considerable, and you will have to add half as much again in order to carry it out.

2845. The grant from the Board of Education in the case of males would cover the cost with the exception of about £10 or £12. The Government would give the third year with the exception of a few pounds. With regard to the school gardening, you spoke of the attitude of certain parents. Have you found much objection on the part of parents with regard to school gardening?—I do not think that can be considered a serious difficulty. I only meant to say that that was the attitude that was taken up at the time by the parents, and that you cannot be absolutely sanguine with regard to school gardens.

2846. The attitude of the parents in Kent and Surrey is, as we have been informed, that they have welcomed it?—I also think that in Devonshire, as the school gardens multiply, the appreciation of them will grow. I have seen some very well carried out, but I do think, and I am sure the parents agree with me, that the more the boys can be got to use their playtime, rather than their school-time in the gardens, the better it will be for them.

2847. You spoke of the great importance of a practical and attractive continuation school?—Yes.

2848. I think you have been in favour of a suggestion that under certain circumstances boys should be released from attendance at the day school at the age of 12 to attend a continuation school up to the age of 16, under special circumstances and in particular localities?—For the boys for whom that could be arranged, I think it would be a very good thing, but you must remember that although we can take children about in the daytime in vans from remote places to the schools we want them to get to, we could not arrange it at continuation schools.

2849. (By Professor Middleton.) I have listened with great interest to your evidence, and I shall not detain you with many questions. When you were asked by the Chairman if you had any suggestions to make with regard to development by the Board of Agriculture, you placed first that the Board should institute some additional

* The following is a copy of the Resolutions referred to:—

ORGANISATION OF AGRICULTURAL EDUCATION.

Resolutions adopted at a General Meeting of the Committee on December 12th, 1901.

"1.—That, if the Board of Agriculture retain their present educational work, it is essential that there shall be complete co-operation between that Board and the Board of Education on all educational matters specially affecting the agricultural classes."

"2.—That for the purposes of agricultural education the country should be divided into districts, and such inspectors appointed as may be necessary."

"3.—That groups of counties, not yet affiliated to any collegiate centre, should be formed, each group being affiliated to some centre."

"4.—That, after due enquiry, reports should be issued dealing with the most appropriate forms of agricultural education for each county."

"5.—That permanent Demonstration Stations should be organised in each county or group of counties."

"6.—That official information bearing upon all matters of agricultural interest, whether educational or otherwise, should be distributed to the public free of cost."

"7.—That to carry out the above objects it is essential that larger funds be placed at the disposal of the Board of Agriculture for educational purposes."

"8.—That the work of the Board of Agriculture might be facilitated by the appointment of a Consultative Committee on the analogy of those of the Board of Education and of the Department of Agriculture in Ireland."

stations for research and enquiry?—I think it would be an advantage if it could be done.

2850. Your great object is to stimulate the interest of farmers and to make them think more about scientific matters?—Yes, and appreciate the results of the work of scientific men.

2851. You suggested that might be done through the agency of agricultural societies?—They would undoubtedly help a good deal.

2852. Do you think it would be practicable to carry on such research or experimental stations as you allude to, through the Royal Agricultural Society?—Yes, my own opinion is that that is one of the things that they are most able to do, or that they might do with most benefit.

2853. Perhaps you are aware that at present most of these experimental stations or research stations are directly associated with agricultural colleges?—Yes.

2854. I can say from my own experience that I have frequently attempted to get local chambers of agriculture or farmers' clubs to take up part of this experimental work, and I have found great difficulty in getting them to do it.—Yes, that is quite true.

2855. Even when local pressure was brought to bear. Do you think a central body in London could secure that local interest which a man on the spot would fail to get?—I do not know that the consultative committee themselves could do it, but I think you might by means of the consultative committee arrive at finding out who the people are in a district to whom you might most successfully appeal.

2856. Provided there are people in the district. I know some districts very intimately where I am afraid I should fail to find them.—I think I may venture to say, by degrees the appreciation of the value of that sort of thing is growing in the country, and I think that through the agricultural societies the growth could be stimulated.

2857. You would rather, perhaps, see it developed through the agricultural societies than through the colleges. Is that your idea?—I would, because the societies involve constancy on the part of the members themselves. The people are resident in the district and if you could get their efforts directed to this channel I think it would come with a greater chance of appreciation. I do not know whether I have made myself clear.

2858. Yes, but personally I should be very much afraid that the effort would not last long.—I do not know at all.

2859. Many local agricultural societies have, as a matter of fact, started experimental stations?—Have they been helped?

2860. Yes, they have been helped, and they have dropped them. There is just one other part of your evidence that I want to refer you to. You said research was one thing and education was another. I suppose you were referring to lower-grade education. You would not make that observation with reference to the higher grades of education—the class of education that goes on say at universities and university colleges?—When a man has reached an advanced stage in the science which he is studying he may begin no doubt under guidance to set himself to research work, but he has got a long road to travel before he comes to that stage.

2861. I quite agree so far as the student is concerned, but what about the teacher?—I quite agree that teachers ought to be encouraged to carry on research, but I do not quite see how they could carry out their work in education and their work in research simultaneously. I do not say so positively, but I should have thought it would be difficult.

2862. Coming to your county of Devon, you found certain lectures were greatly appreciated, and certain were scouted, and that the lectures appreciated were horticulture, bee-keeping and poultry-keeping?—Yes, they were all of a very practical character.

2863. The other lectures of a scientific character were not so much appreciated?—Not so much—not generally.

2864. Because the men who were giving those lectures were not able to translate them into practice for the farmer?—Yes, I should say that is the truth of it.

2865. Do you think men would ever be able to teach farmers who were not themselves familiar with experimental work and farming both. Could you make use of an instructor who had not himself had experience in some form of research work?—I agree for the purpose of training the

instructor that research work is extremely valuable, absolutely. *Sir C.T. Dyke Acland.*

2866. And the failure of your instructors may have been because they had no experience?—I cannot speak of particular instances, but I think it is extremely likely it may be so. *May, 1907.*

2867. While you put forward research as one of the most important subjects with which we have to deal, you deprecate rather the experimental farm and the experimental station?—For the purposes of research, yes, because you could hardly get a practical farmer into a really scientific state of mind—I mean research depends upon exact science, does it not, on all the processes being carried out in an exactly scientific manner, and a farmer cannot be brought into that state of mind.

2868. What you mean is we cannot take an ordinary farm, and use it for the purposes of research; it must be controlled?—Yes, you must have a scientific man watching it.

2869. I did not quite understand what class of experimental farm you alluded to when you deprecated the experimental farm?—I deprecate demonstration and illustration being carried on at fixed stations. I think that it is much more valuable to arrange for their being carried on at different places in successive years. I think you get more for your money, so to speak. More people are interested in it, and you do not require, and certainly cannot get from the ordinary farmer, the scientific precision which makes experiment amount to research. You can get a principle which you well know beforehand fairly illustrated on any farm you choose to apply it to. I do not know whether I have made myself clear.

2870. Yes, I understand your point. You believe that demonstration plots should be moved about the country?—Yes, I think that is the most useful form.

2871. (*By Mr. Davies.*) I think you told us, Sir Thomas, that agriculture is almost the exclusive industry in your county. Is that so?—We have no great factories anywhere and agriculture is the chief thing no doubt.

2872. The majority of the people there are very much interested in agriculture?—I do not know that I should exactly say that. They are interested in the prosperity of agriculture in this sense, that nearly all the towns in Devonshire depend upon the prosperity of the agriculturists surrounding them.

2873. You also told the Committee, I think, that there is no agricultural college as a centre for the counties of Devon and Somerset and Cornwall?—Not at present, no.

2874. Your personal opinion, I gather from your replies to different questions is that you yourself are of opinion that there should be a centre of that kind?—I am in hopes that the Seale Hayne Bequest, when the institution is established, will be found to be of great value, but it all depends, of course, on the scheme and how it is carried out. We are in the dark with regard to that at present. I think there is plenty of room for research and that instruction can be carried on.

2875. The great drawback now is that the farmers will not appreciate it. That is the great reason why the County Council do not proceed with it I suppose?—No, I do not say that, I think they will appreciate it if it is properly carried out. What I said with reference to that subject a little while ago was only intended to convey this: that we were not prepared for, and we did not think that there was a *bona fide* demand for an agricultural college some years ago sufficient to justify us in spending the large amount of money that would have been required to establish one. We thought that our expenditure of the grants given to us might be more wisely carried out in another direction.

2876. Do you think that it is a good thing to have an agricultural department in connection with a university college—that there are any advantages in being in close touch with a university college?—I hardly know how to answer that, because I do not believe that you can teach farming at an institution. You can teach them agricultural processes, but I do not think you will make a college farm succeed as a farm. At the college, however, you can certainly teach them things that would be of very great value to them in the practice of agriculture.

2877. At Leeds, Bangor, Aberystwyth, and some of the other colleges there are agricultural departments directly in conjunction with the other work of the college?—Yes.

2878. More or less apart from the ordinary curriculum of the college?—I do not know a bit, and I should like

Sir C.T. Dyke
Acland.

9 May, 1907.

to know whether the balance sheets of those farms can be regarded as satisfactory. It may be that they do show a satisfactory balance sheet, but if that is so I should be surprised. If the bailiff of the farm can produce a satisfactory balance sheet and show that the institution is richer for having a farm, it might be regarded as satisfactory evidence, but I should doubt it.

2879. I am afraid I have not made myself clear. What I want to know is whether to take Bristol, for instance, which I believe is a university college, and which students from your particular county attend?—I do not know that they do, but they may.

2880. It is the only college near you, is it not?—Yes.

2881. Whether it would not be thought at all possible to have an agricultural department in connection with the college there?—You mean to say by the agricultural department, a department devoted to teaching science as applicable to agriculture.

2882. Yes?—I do not see any reason why they should not.

2883. Do you think the County Council would be prepared to give you a grant for that purpose?—Our County Council?

2884. Yes.—I would not speak positively to that, but supposing they were to give us scholarships, I think possibly we might send some students there on terms to be arranged.

2885. Is dearth of students due at all to the lack of secondary schools in the counties of Cornwall, Devonshire, and Somerset?—I am glad you have asked me that question, because I think it is quite possible that it is. I think, if the condition of our secondary education in Devon were better, that it is quite possible that the boys themselves who have been through secondary schools would be intelligent, and would persuade their fathers to let them go and carry on their work a little further at these institutions.

2886. Some of the witnesses have told us that the type of student who came up, especially to the short courses that have been held at the agricultural departments connected with these various colleges, was not fit to receive the instruction that was provided for them, especially in the chemistry.—That, I should think, was extremely likely.

2887. That seems to have been due to the lack of secondary schools and education; and when you told the Committee that the farmers would not take advantage of the college, even if an agricultural college was provided for them—?—Did I say that?

2888. I understand you to say so?—I said I was not sanguine about it; I am doubtful at present.

2889. Whether that was due to the fact that the sons of the farmers were not sufficiently qualified even to receive simple agricultural education at a college?—I think that would be true of a very large number of them, certainly I know in the case of a great many farmers' sons—men who, come to me for farms when I have had farms to let—I frequently find that they have not been to anything but an elementary school; but I do think this, that when the endowed schools have gone to work, progress has been made with the farmers' sons, and I look forward, under the Act of 1902, to a very considerable advantage coming to the farmer in respect of secondary education, and I hope, when the farmers have the schools accessible to them, there will be many more boys fitted for availing themselves of an agricultural college.

2890. I think you told the Committee that you deprecated any sort of special instruction in agriculture in these secondary schools?—Yes; I deprecate devoting any part of the teaching at secondary schools to specialising in farming.

2891. You would not object to having a special course in science in contrast to the classical side of a secondary school, would you, because our experience has been, that, supposing a farmer sends his son to a secondary school for two or three years, and he is taught Latin and French, and so on, and little attention is paid to chemistry and botany, and he goes straight back to the farm and he simply forgets all he has learnt in a year or two, and is not much better for having gone at all?—I think the curriculum in a secondary school in which science did not form a part of it would be very deficient. I think our object in providing secondary schools for the people in Devonshire—we are now trying to provide five—our object will be to educate the sons of the people in the neighbourhood who are going in for other kinds of business besides farming. We cannot devote ourselves more to the business of farming for farmers' sons than to any other kind of business into which these lads may be intending to go. We must fit them as widely as we can

for their different careers in life; and, therefore for the good of the school as well as for the good of the boy, specialising must be deferred to the last possible moment. I think that the general education at secondary schools ought to be kept as liberal and wide as possible, and that special education for farmers' sons or others should be conducted chiefly at some other school. I am quite in favour of a wide education. I do not want at all to see the education in secondary schools confined to classics, and French, and languages, and so on; science must have its place; only not agricultural science.

2892. In connection with the Journal of the Bath and West, what organisation have you for the distribution?—It is distributed to all the members of the Society.

2893. But not to other farmers?—No; the institutions get it.

2894. It does not come within the reach of the smaller farmers?—Members of the Society get the Journal; and as I explained, we occasionally, when we are asked, take one particular subject in any particular year that may be desired, and reprint one and sell it or distribute it gratis to people who ask for it.

2895. I think you said two sets of experiments are carried on in your county, one set by the agricultural committee of the County Council and the other set by the Bath and West?—Yes; that is true to a certain extent. There is, in Devonshire, one of the manure and mutton experiments being carried on by the Bath and West Society, and the County Council have their own experiments being carried on independently from that by their own instructor.

2896. No attempt is made to co-ordinate the results?—No, no attempt is made at all; they have nothing to do with each other.

2897. Is the dairying industry as flourishing now as it ever has been in Devonshire? I understand that you have no travelling dairy school there now?—In Devonshire we have had a travelling dairy school for several years—I do not quite remember how many, but nearly twenty I should think—and the demand seems to increase rather than to diminish, and it is bespoken now for twelve months ahead. It gives a course of about three weeks in each place, and then it moves on to another place; and, as I have said, its work is bespoken very far ahead.

2898. (By Mr. Latham.) You are very anxious about these agricultural societies carrying on research?—Not research, experiment.

2899. I have no doubt a very strong reason for you wishing that they should do it is in consequence of their being all over the country. They visit the different towns all over the country, and in consequence of that you think it very desirable that they should be induced to do it?—Yes; I think it would be a good thing if they could be induced to do it.

2900. Mr Middleton said it was tried and it was found to be hopeless; but I do not know a single county where it has been tried.

Professor Middleton: Norfolk has had experiments in connection with the Chamber of Agriculture.

2901. (By Mr. Latham.) The Chamber of Agriculture is not a real agricultural society. You have a very large number of societies that are scattered all over the country.—Yes; that is my point.

2902. (By the Chairman.) You have stated that in the present stage of development you do not believe that you can induce any great number of farmers to send their sons to these colleges in the west of England. What I want to ask you, is the curriculum which you would prescribe for the son of a land-owner, say to fill a position offered by an owner to whom expense was no object, and whose object was to obtain a man of the utmost efficiency with regard to estate management; I want to know what is the kind of education which such an individual, according to you, should have. I take it you would send him to the best secondary school you could find, and give him the best education you could. You would give him science, and you would not give him classics?—Yes, I should give him classics to begin with.

2903. I want to find out what you consider necessary. Do you consider a knowledge of classics would be necessary to him in the management of an estate. Of course, it would be of the greatest use to him in other ways?—Put in that way, I do not think it would be much use to him in the management of an estate, but the process of learning them would have been of very great use to him.

2904. Supposing he had sufficient time, you would not

object to sending him to the modern side of a secondary school?—No.

2905. Having done that he leaves the modern side of the secondary school, and where would you send him next. Would you send him then to a university for a course of pure science, or would you send him to the agricultural department of a university college?—When he leaves the secondary school?

2906. Yes?—I think it would be very wise to give him a year or two of pure science; I do think that, certainly.

2907. A general education given at the university?—Yes.

2908. And then finally this specific agricultural education of the highest class?—Yes, when he has learnt thoroughly to appreciate science.

2909. That applies to landowners, land agents, and all that class who have the means of becoming agricultural experts?—Yes, who have the means of carrying on their education up to 21 or 22 years of age.

2910. You are in favour of a specialisation coming quite at the end, the later the better, and the more general education he could get at the end also the better?—Yes.

2911. Now I want to have your opinion stated quite clearly on the question of research and experimental farms. You would not object to an experimental farm conducted independently of an educational institution?—Not at all.

2912. You would, wherever you could, have an experimental farm and give encouragement to counties or societies to start such a farm?—Yes, I think the societies ought to start them; I wish to see it done.

2913. You would have no objection to having the research station which you favour in connection with that farm?—I would have the research station connected with the education centre; I am quite ready to see that. If you start a college for a group of counties or a county I would certainly have alongside of that college a research station.

2914. You would not have connected with that college a farm?—Not a farm—certainly not.

2915. A research station with a college?—Yes.

2916. Where there is no college, as there is not in the West of England, you would have a research station independently?—Yes, research independently.

2917. And that research started under the auspices of some society, but encouraged by the Board of Agriculture by a very generous grant?—Yes, coupled with careful inspection.

2918. Of course; you would not exclude from that research station original research?—No, I wish to have original research.

2919. I ask you because in the examination of Mr.

Acland, he put a question to you about educational research, and original research?—Yes.

2920. I, personally, do not quite see how you can separate the two, but in any case you would not limit that research to what is called educational research; you would allow original research to be done there?—I think original research ought to be carried on there.

2921. The next point is that you are in favour of demonstrations, only that the demonstrations should not be stationary but should be migratory?—Yes.

2922. My only object is to make quite clear what your own view is; not what my view is. I hope that summarises your ideas on the subject?—Yes, I certainly think so. I do not for one moment say that at a particular place where you have people gathered together you should not have a series of different kinds of demonstrations. I think you should. The more illustration you may have in connection with your educational institution the better. I only mean to say that for the purpose of the farmers, the stationary demonstration plot is of very little use.

2923. (*By Lord Barnard.*) I only want to ask one question with regard to the Board of Agriculture literature, to which I think you referred. Is it largely distributed amongst the farmers in the county?—It is to a considerable extent. I do not know by what machinery. I myself did distribute for some years a very liberal supply that was sent to me among my own tenants. I sent it round, and since then the Board have been liberal enough to undertake the distribution itself. How much they send out I do not know, but I do know that a great many farmers I come across, from time to time, do not know about these leaflets.

2924. Those who do get them appreciate them and value them?—They do, I carry them with me about my farms, and when my tenants have them, they are in the habit of quoting them to me and asking me questions about them.

2925. You think that anything that would tend to the further circulation of them would be of advantage?—Yes, and as I said before, I think if they were distributed to all the village post offices throughout the country, and that was made known, that would be the best way of doing it.

2926. Are you aware that certain agricultural colleges issue and circulate bulletins also?—I did not know that, but I should be in favour of that. I should like to see any amount of intelligible literature circulated. I am bound to say that some of these leaflets have been a little above the ordinary average intelligence of those who are intended to read them. I think that that is a criticism that one may fairly make without saying anything against the Board of Agriculture. Perhaps I ought not to have instanced that, but I have very often heard it said, and as it is very often said, I thought it better to communicate it to you.

*Sir C. T. Dyke
Acland.*

9 May, 1907.

Mr. JOHN BICKERSTETH, called and examined.

2927. (*By the Chairman.*) You are one of the joint clerks of the Yorkshire Council for Agricultural Education?—Yes.

2928. You have been clerk of the East Riding County Council since its institution, and of the Technical Instruction Committee appointed by that body in 1891?—Yes, that is so.

2929. I understand that shortly after the Customs and Excise money was given to County Councils a scheme was drawn up by the authorities of the Yorkshire College, providing that the agricultural work should be carried on by lecturers, who should work throughout the three Ridings under the superintendence of the Professor of agriculture?—Yes; the scheme was submitted to the three County Councils, and was practically adopted by all three authorities. The scheme suggested that the agricultural education work of the three Ridings should be conducted on identical lines, under the authority and through the agency of the Yorkshire College, which was then, as your Lordship may remember, a part of the Victoria University, including the College of Liverpool, Owens College, Manchester, and the Yorkshire College at Leeds. That scheme mainly provided for peripatetic lectures by lecturers who should act under the superintendence of the Professor of Agriculture. The department of agriculture in the College

was established about this time, with a chair of agriculture. A Professor of Agriculture was appointed either at that time or a few months previously. The agricultural department was then supported partly from the general funds of the University and partly by subscriptions, which were, I think, got up among the great landowners of Yorkshire for the purposes of establishing a chair of agriculture at their provincial college. I can speak more especially for the East Riding, as it was one of the three partners; but the scheme was adopted by all the three County Councils. Representatives of these Councils were placed upon the agricultural committee of the College, and, subject to the nominal control of the County Council Technical Instruction Committees (who were asked to approve all centres where lectures were to be given), the work was organised and carried on by the agricultural department of the College. I think it was felt that by adopting the scheme drawn up by the college, the parties were able at the very first to insure that the character of the instruction given should be of the highest class. We were able to attract to the work men, as lecturers, who were more willing to act under the *aegis* of the college or university than if they had merely been the paid lecturers of individual County Councils. I remember it was pointed out to us that by the adoption of a joint scheme we should get not only better lecturers, but that each County Council, instead of confining its

*Mr. J.
Bickers'eth.*

Mr. J.
Bickersteth.
9 May, 1907.

missionary efforts to a single lecturer, would have the advantage jointly of the services of three lecturers appointed at the very first. That number was afterwards increased. It was felt also, that instead of the lecturers' work being submitted to what would have been after all a lay committee of the County Council, it could be insured that the work should be supervised by the Professor of Agriculture at the College. I have said that the work mainly consisted of peripatetic lectures, but there was also started at the College a ten weeks' course for farmers' sons. That experiment was to a certain extent successful, but it was found that the ten weeks' course was rather too short, and I believe that at the present time we have no ten weeks' courses, although we have winter courses, to fit their convenience when farmers' sons can be best spared from the farm. We also established at that time a travelling dairy—a properly equipped dairy, which was taken round the country, and stopped at various places for a fortnight or three weeks, whilst the dairymaids of the district came to the classes. There were also started at that time Saturday classes for teachers in elementary schools. These last-mentioned classes lasted for two or three years. They were very well attended by the teachers, and we were so anxious to get them to come that we were liberal in paying their expenses. They came, but we did not find that the classes were really a very great advantage for the work we thought we had to carry on. The fact is, we were learning our own work, because we were a young educational body, and we thought it desirable to start lectures or classes for the teachers of elementary schools which might enable them to teach similar subjects in their schools. But at that time we had no control or special interest in elementary schools, and we found often that the country managers took no interest in our work. There was a perhaps natural prejudice at that time against the introduction of fresh extra subjects into the curriculum. They said they already had enough, and we feared the lectures did not at once do much good, but we hope and believe that the expenditure of money upon them was not altogether wasted, because some of the object lessons given in the classes on agriculture were no doubt afterwards of some advantage to the teachers in their schools.

2930. Were the peripatetic lectures well attended?—Yes; very well attended. Professor Seton has a list which we have prepared of the number of peripatetic lectures we have given up to the present time, and, roughly speaking, I take the number as about 4,500.

2931. Can you state the subjects on which lectures were given?—I would rather leave Professor Seton to answer these details. We publish every year a statement of the courses. They cover a wide range of agricultural subjects, but these subjects depend to some extent upon the individual taste of the local committees or the capacity of the lecturers whom we happen to have available.

2932. Is the winter course well attended?—Not so well attended as we should like. I think that this year we have something like 50 students attending it. We do our best to encourage the farmers to send their sons, but there is some disinclination to let them go from the farm. We are beginning our work, and have not yet got to the full fruition of our hopes; but we hope that some day farmers will send their sons more readily. Their fees are found by the county, and we also pay them a maintenance allowance of some 15s. per week. We have a sub-committee who go carefully into the applications for these scholarships, or bursaries, or exhibitions, or whatever you like to call them, and we endeavour to satisfy ourselves that the most suitable are selected—those most fitted to learn what the University has got to teach them, so far as it can teach them anything in such a short time. I understand that about 75 per cent. of them return to farming, although some go away perhaps to Egypt or the Argentine.

2933. You think the work will be more and more valued by the farmers?—I am sure it will. In Yorkshire we believe that if you are to do anything to benefit the industry of agriculture you must interest the captains of that industry. We began our work 15 years ago. It was found that there was a considerable suspicion on the part of those engaged in the industry of farming. They were rather inclined at first to resent the idea that a scientific man had anything to teach them. The farmers thought that they knew more than any professor about their business. We have since come much into contact with the farmers, not only by means of the peripatetic lectures but by other extensions of our work in the way of demonstration plots, &c. In the autumn of 1887 the Garforth farm was taken on lease by a joint committee of the East and West Riding County Councils, and a good deal of experimental work is carried on there. The place is visited in summer by farmers

in parties of sometimes 40 to 50, some of whom have to come a long way, and they are apparently much interested in the experimental work as to the fertilising effects of manures, &c. We have at Garforth a place where we carry on experiments both in crops and stock, undertaken for the benefit of agriculture generally, and we have under the skilled supervision of the University staff a number of plots throughout the county, where some of the experiments and demonstrations arranged at Garforth are duplicated under various conditions. The people engaged in farming in these districts now come to the Professor with great readiness to seek his counsel or guidance upon various points. We try to bring the workers of the district into touch with the Professor, who is approaching the same subjects from perhaps a more scientific point of view. I have always thought that people could not understand what technical instruction could be until they realised that there are two distinct lines upon which a municipality ought to act. There is on the one hand the scientific worker, who is not working exactly with a view to direct and immediate money profit, but in order to find out what are the secrets and laws of nature bearing upon a particular industry. We want to encourage the best available intelligence to be brought to bear upon the pure science of any particular industry. This would apply to soap boiling or any other industry as much as to agriculture. On the other hand we have to consider the interests of general education. We want to enlarge the general intelligence of the students in order that they may be educated to accept and appreciate the conclusions of trained observers. We want the two classes—that is, the class engaged in scientific work and the class engaged in commercial work—to shake hands at the top and all the way up. That gives the worker more interest in his work. We have taught many farmers who did not believe they had anything to learn to come to the experts and seek useful practical help, which is readily given. We sometimes acquire the services of men who will occasionally want to go in for a little research as distinguished from ordinary experiments, and it would be an advantage if we could persuade this Committee to help us to get a little more money for such work. We also want more money for our experimental work, and to complete our educational work; but in conjunction with the Board of Agriculture we occasionally come across problems which it is most important to solve, although probably we cannot show that the solving of them would necessarily result in an immediate saving to the ratepayers. There come in considerations not of the municipality but of the nation, which we want to help us in such work. We have done a great deal to remove the prejudices of the farming community against scientific work, but having brought the matter up to this point we want a little more money.

2934. You think that the way in which the Board of Agriculture could best help your work would be in the direction of research?—Well, I am afraid that in my anxiety not to forget research, I may have given a somewhat wrong impression. So far as educational efficiency goes we have very nearly reached the end of our resources. The North Riding County Council includes, in addition to an agricultural part, the great rich district of Cleveland, and the West Riding, as we all know, has wealth which comes from successful manufacture and successful mining. In the East Riding, however, we are only a poor agricultural county, and I am amazed at the liberality of the farmers in my County Council in their willingness to give money for the purposes of higher education. When we began work we were comparatively rich, because the "whisky money" was not drawn out of the rates, and we were liberal. We paid our share in keeping up these farm buildings, we resolved from the first that our work should be good, and we paid proportionately for it. But now even our educational work will suffer unless we have some more help. We have been spending in the whole of Yorkshire something like £8,000 a year on the agricultural department of the University, and the Board of Agriculture has contributed £800 as well as £200 for experimental work. That is only about one-eighth of the whole, and I think our work is of sufficient national importance to justify us in asking the Treasury for a little more. The research work is, of course, indefinite in amount, but I would like to be able to go on with it. As our work develops the interest which the farmers take in it shows a tendency to increase. There are now many places where they would be perfectly willing to have a demonstration plot or experiments on grass land or the like. Plenty of farmers are sufficiently interested to lend the necessary land, and even to give the labour. The seeds and the manure would cost very little. What does cost, and what must be paid for if the character of the work be maintained at a high level, is the service of a competent person to supervise. We have one member of our

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Mr. J.
Bickersteth.
—
9 May, 1907.

staff, Mr. Stewart, whose business it is (acting under Prof. Seton) to visit and inspect these plots. Every plot is, to a certain extent, a scientific experiment. We should not be doing good work if we simply left it to the people and said, "Now carry out the instructions." The instructions must be carried out under the supervision of a trained and competent scientific assistant to our Professor. I should say that our staff are now worked to the limits of human endurance, and we should like to know that we could afford to carry out extensions. Apart from any question of research, we would like your Committee to take into account that our educational resources are not what they were. Parliament has been good enough to say that the technical instruction money is now to be used for higher education. We welcome that change and extension, but I am sorry to say that a result of the Act of 1902 was to charge upon the higher education work a great deal that really belongs to elementary education, such as the training of pupil-teachers; so that really our higher education funds are diminishing. In my own county we have rated ourselves for higher education, but much of what Parliament intended us to spend on higher education is really spent necessarily on work which—although technically higher education, from the point of view of the auditor—really appertains properly to the domain of elementary education. I mention that as a reason for asking that our higher educational work should also be helped, apart from the absolute duty that lies upon the nation to help us in research work.

2935. What is the amount of the rate?—The amount of the rate is a penny in the pound, but that means a great deal in an agricultural district. Supposing a man is earning £1,000 a year in the East Riding by professional or similar work, he pays very much less upon a penny rate than the farmer, because of the difference in his assessment. Every politician knows that the anomalies in the incidence of rating is a subject that ought to be dealt with, but it is not a subject, perhaps, that very deeply interests the general public. We don't desire to enter into the academic discussion as to whether or not the ultimate burden falls on the landlord or tenant, but speaking as the official adviser and friend of one of the councils I know that if I ask them for another penny rate the agricultural member says: "That means another £5 out of my pocket," whereas in the case of persons in a town earning as much, but assessed much lower on account of their moderate rental, the penny rate would in comparison represent only a few shillings. A penny rate in agricultural districts for higher education may mean that a farmer has to pay from four to six pounds or eight pounds extra. The Royal Commission came to a conclusion on the subject five years ago, but it has been pigeon-holed ever since.

2936. Your county rate for higher education is 1d. ?—Yes.

2937. What is it in the West Riding?—I do not know the West Riding rate. I think in the North Riding they, for some time, refused to levy a rate at all. In the East Riding we have persuaded two of our boroughs to levy a penny rate for higher education upon condition that the County Council established secondary schools in these boroughs. That has been done, but the county as a whole is responsible for higher education.

2938. Is the provision of secondary schools adequate in the three Ridings?—The policy in the three Ridings is not identical. I can tell you what it is in my own Riding, and I have a rough idea of what it is in the other two. Speaking broadly, all three Ridings are doing their best to encourage and secure the suitability and efficiency of existing secondary schools. In my own county we have founded two or three secondary schools, and it is an expensive business if you have a high standard. It may be germane to this enquiry to mention that we have scholarships to these secondary schools. If one were asked to trace one's ideal of the progress of a farmer's boy, I should say that he would get a scholarship from the elementary school to a secondary school, and after he leaves the secondary school we should like him to go back to the farm for a year or two. Then, armed with a good general education and a knowledge of the manual parts of farming, he would come to Leeds and be there instructed, in connection with the University, in the principles which underlie agriculture. We discourage any attempts to teach agriculture in the secondary schools. Our professors and lecturers tell us that they would rather have a pupil well trained in general intelligence than one who has learned a little agriculture in a secondary school. It could be nothing more than a smattering of specialisation that could be given in a secondary school, and that would interfere with and

hinder rather than promote the valuable instruction which the student might get in the University course. It is possible that in Yorkshire we may have come to a different conclusion on that matter from some other places. One hears of some encouragement of the idea that agriculture should be taught in secondary schools, or that secondary schools should be founded in agricultural districts, with an agricultural side. From what I have been told by our professors and lecturers, they would rather that was not done. They would rather have a boy who had learned a little mathematics, or who was able to take notes and understand the lectures, than one who had picked up a smattering of so-called agricultural knowledge at a secondary school.

2939. Do the farmers send their sons to the secondary schools?—I wish they would do so more commonly. I think some of them do so. Certainly some of the best of them do so, and we are doing all we can, even in the thinly-populated agricultural districts, to make it possible for farmers' sons to go to secondary schools. I am sorry to say that our standard for examination for scholarships is not so high as I should like it to be; there is little or no difficulty in the way of boys from an elementary school getting an entrance scholarship to a secondary school. The reason which would prevent the farmer from sending his sons is not, in Yorkshire, the want of money. In the North Riding and certainly in the West Riding, as well as in the East Riding, it is quite possible for the fees to be found if the circumstances of the parents are poor. Some kind of bursary can be got for maintenance. The difficulty is not the fee which has to be paid, but that the poor man likes to have the advantage of his son's labour. Oddly enough, so far as one is able to judge, the applications for scholarships seem to come rather more readily and frequently from the Dale farmers in the North Riding than from the larger and richer farmers in the East Riding. Some of the men who have little more than small holdings appear to be more anxious to get these scholarships for their sons than the better-off farmers, but I do not want our work to be judged at present from the number of pupils we get; I believe we are on the right lines and I am sure that one day the farmers will send their sons more readily than they do now, and those whom we now turn out will in due time send their sons. The education of a whole district is not to be changed in a day, or in a year, or perhaps even in 10 years. It is a gradual process. We have convinced the farmers that we have something to teach and that it is good for their sons to come and take lessons. I believe they will come in greater numbers in the future.

2940. You stated, I think, that in 1897 the Garforth Farm was leased by a Joint Committee of the East and West County Councils, is that still going on?—Yes.

2941. Is the farm attached to the College?—Yes.

2942. Is it managed by the University?—Yes. But the University does not, as in the case of its leather industry and engineering departments, appoint a departmental committee to manage the agricultural branch, they recognise the Joint Agricultural Council which represents the County Councils as a committee of the University. The University acting in complete harmony with the County Councils allows the committee of these councils to act as its committee for the regulation of all matters which the University has ultimately to deal with. If there was a vacancy in a lectureship to-morrow we should advertise it and recommend a man to the Council of the University who would appoint him. The union between the University work and the County Council work is in this particular complete. I called myself one of the joint clerks of the Yorkshire Council for Agricultural Education, my colleagues are the two gentlemen who represent and direct the education in the North and West Ridings respectively.

2943. What is the size of the farm, and what are the operations conducted there?—When Professor Seton gives evidence he can tell you better about that, but, roughly speaking, the farm is about 300 acres in extent and about half of it is grass.

2944. I suppose the scope of the work has developed since the farm was taken?—Yes, enormously. Speaking with some pride as one who has taken part in it from the beginning, I may say that it has co-ordinated the system. We have a university department where students can take up the study of agriculture for a degree, and we have got scholarships which afford a ladder from the elementary schools to the University. A certain number of the entrance scholarships are confined to children coming from elementary schools. We hope by means of Saturday classes for teachers and the educational gardens that the

Mr. J.
Bickersteth.
9 May, 1907.

University staff, and the teachers in the elementary schools will be gradually brought into closer relationship. Our training helps to fit teachers to encourage intelligent nature study in their schools. Our work has increased. We have made it possible for farmers' sons to come to Leeds for a winter session, and we think that two consecutive winter sessions together with attendance at one summer term give such a training as is eminently desirable for one about to take up farming. With a third winter course a young man ought to be able to obtain the National Diploma in Agriculture. I have explained that at Garforth we have a place where we can carry on experiments both in crops and stock. The number of extension lectures is limited by the number of our staff. The demand for these lectures is fully maintained and the interest taken in them has increased.

2945. You give a science degree in agriculture?—Yes. That was not so when we began, but with the co-operation of our friends at Leeds we got the Victoria University to do it and it has since been continued by the Leeds University. Agriculture is a recognised subject for a science degree.

2946. Has that been taken by farmers' sons?—Yes, I think so.

2947. Do the University staff carry out the experiments you mentioned?—Yes.

2948. Are these experiments carried out at the farm or in the Ridings?—Both. Some of those carried out in different parts of the county are duplicates of experiments made at Garforth. We selected Garforth because it was near Leeds but, of course, there are some desirable experiments not suited to that particular soil.

2949. The lectures are on the results of these experiments?—Yes. I think that at one time the subjects of the lectures depended upon a list made by each lecturer, but now we have given the lecturers instructions to treat the plots as their text for all their lectures.

2950. Are these lectures well attended by farmers?—Yes, they are very well attended by farmers. There is practically no diminution in the numbers who attend. I hand in a table showing the number. It appears that last year's average was 32 attendances for agriculture, 40 average attendances for horticultural work, and 54 for butter-making. I hear much less than I used to hear when we began to the effect that these lectures are attended by people attracted by the charm of the lecturer more than for their interest in the particular subject. If the composition of the audiences now and previously could be analysed it would be found that there was now a larger percentage of persons attending who are really in a genuine way interested in farming. Both the numbers and the quality keep up, indeed the quality improves.

2951. Have you centres for teaching fruit culture?—Yes, at Garforth we have a garden where experiments are carried on in bush fruit and grafting. Teachers learn a little about these things when they go, and we have a demonstrator for that sort of work who starts little centres in places where he has reason to believe the people will be interested. I remember one place in point—a place where they had allotments and grew apples, and where a successful course of lectures was well attended for eight or ten consecutive weeks.

2952. Have you any farriery instruction?—Yes, we have a farriery instructor who gives lectures and demonstrations of a practical character. He lectures in villages, and in addition has done some good work by going to places where members of our committee introduce him where he can see the smiths at their work. He makes a missionary tour amongst them, and some of these expeditions have resulted in a satisfactory course of lectures being arranged.

2953. Are there special agricultural exhibitions given by the three councils?—Yes; tenable at the winter and summer courses. I think all three Ridings give besides these university scholarships. That is the top of our ladder. We have in Yorkshire large farmers and small farmers, and the Council have done their best to make the course suitable for all classes. If our ordinary list was filled up, and the son of a farmer was to appear with special qualifications, we could give him a special scholarship to go to the University.

2954. You are of opinion that the work of an institution must not be judged altogether by the number or type or after history of student?—I do think that is most important. I should regard with dismay any proposal to judge our work by the number of persons who at a particular time attend any particular course. The contact of our scientific men with the actual workers in the industry of agri-

culture is of provincial and indeed national importance, and ought to be encouraged apart from counting heads. I wish we could get more young farmers to come to us. When we began we thought we should be doing fairly well if we got ten, but now we have 50, and we hope for many more. The Council have always felt that they were working for the industry of agriculture, and that their work will be justified if they can induce those who are engaged in that industry as a commercial enterprise to adopt the method which the best opinion of men of science who give their attention to the matter, suggest as being in the long run the most profitable.

2955. Have you a dairy school at the farm?—Yes. We keep a herd of cows, and have a dairy school with an instructress. We give scholarships for short courses. Lord Belper, who is a member of your Committee, is aware that we have a friendly agreement with the Midland Dairy Institute that we at Garforth will not carry on dairy students quite so far as that institution carries them on. At Kegworth they have a dairy school proper, and they make cheeses, whereas we do not. Upon several occasions during the time that this friendly agreement has lasted we have sent advanced dairy students to the Midland Dairy Institute, and I believe they have reciprocated by sending agricultural students to Leeds. We send our dairy instructress into the country on occasional peripatetic work. We use our own discretion as to that. If we think that the people in a certain district ought to come and do not, we may send her there, and a few visits do good.

2956. Would you be in favour of a scheme being drawn up annually for the county showing the whole agricultural education work in the county, and that this should be submitted to the Board of Agriculture, so that grants might be made in proportion to the work done?—I should approve of that. We have the advantage of the frequent visits of the inspectors of the Board of Agriculture, and it seems to me that it would be quite simple to arrange that our scheme for the whole year should be submitted to the Board. If the Board of Agriculture could suggest any improvements or alterations we should welcome them.

2957. Do you think that such a scheme should be drawn up for every county in England?—I have rather a terror of uniformity.

2958. I don't mean that the schemes should be identical, but that their character should be initiated by the local authority in accordance with the wants of its own locality?—Yes, that is our view in Yorkshire, but we have there an enormous advantage, which makes us unique, through the connection with the Leeds University. That institution is rather anxious to extend its sphere of usefulness, and it has helped us in every way, and we have helped it so far as we could. The connection between the university and the county is we think an ideal one.

2959. Do you think it would be desirable to have a consultative committee in London, in which representatives of the agricultural interest throughout the country should be sent?—I think that would be a very good plan.

2960. In order to co-ordinate the various results throughout the country?—Yes. If such a committee is formed I should like it to have a little command of money. There are things which occur to us in our daily work that need money, which the ratepayers can hardly be expected to give. If you had a consultative committee, a strong committee, there might be upon it men who could judge, and advise whether such a sum as £500 should be allowed for the carrying out of important practical experiments suggested by such a body as the Yorkshire Agricultural Council. I may mention that at Leeds we are now engaged in a special investigation. The farmers of Yorkshire are rather annoyed at the inclination which the towns have shown to say that all the pollution in milk comes from the shocking state in which the farmers keep their homesteads. We in the country think that some of the towns do not keep the milk quite as it ought to be treated from the time it is delivered at a railway station to the time it is consumed, perhaps by poor children in the slums. I wanted my Committee to undertake an inquiry on the subject, but they had not got any money for the purpose. I managed, however, to persuade the Sanitary Authorities of two Ridings—the North Riding backed out of it, but Sheffield, Leeds, Bradford, Hull and Rotherham contributed—to plank down £500, so we employed a trained bacteriologist, shut him up in a room at Garforth, and told him we should send him samples of milk as it left the farm, as it was found in transit, as it was offered for sale in a shop, and as it reached the consumer's hands. That means six or seven samples of the same consignment of milk. The

Board of Agriculture blessed us, but neither it nor the Local Government Board could find us any money. That is an illustration of how matters come up now and then for which we should like money assistance if it could be made available.

(By Mr. Latham.) We want the same kind of inquiry not only in your county, but all over England.

2961. (By the Chairman.) I understand that the average annual expenditure of the council for some years past has been about £8,500?—Yes.

2962. Towards which the national contribution has been £800 to the University and £200 for practical work at the farm?—Yes.

2963. Then you have spent out of the rates more than £5,000 in the erection and equipment of buildings, and on other improvements, and have also stocked the farm at a cost of £3,700?—Yes. That is quite independent of the University equipment of which our students share the benefit.

2964. What are the results of the farm? Are they satisfactory?—If any eminent person could tell us how to state or estimate the item "value of experimental work," we should be glad to know how to do it. Some people would say we were farming at a loss, but it is not, as a matter of fact, a big loss, perhaps not more than £400 or £500 a year.

2965. You think that the grant of £200 per annum by the Board of Agriculture for experimental work is altogether inadequate?—Yes. And I should like more added also to the £800 given to the University.

2966. I suppose the result of your 15 years' work has been to bring into more immediate relation the purely scientific man and the practical workers in the farming industry?—Yes.

2967. Of course you value the reciprocal influence of the one on the other?—Yes.

2968. The scientific man has something to learn from those whom you have called the captains in the industry of farming?—Yes, it is important to both that each should learn something from the other. Our Professor and his staff have instructions to let no opportunity pass of meeting farmers and discussing with them any questions of a possible improvement in their methods.

2969. I understood you to say that throughout the summer farmers come to your farm and there follow the work and the experiments in progress?—Yes.

2970. Increasing numbers?—Yes. It seems easier every year to get farmers who are willing to lend plots of land for demonstration purposes.

2971. You find that the small farmers are just as anxious as the large farmers to obtain education for their sons?—Sometimes rather more so. The Committee have to interview the applicants for scholarships or exhibitions, and they find they get rather more applications from the small North Riding farmers than from the larger farmers in the East or West Riding.

2972. Are the lectures ever attended by labourers?—I don't know. In the districts I am most acquainted with the population is so scattered that the farmers often have to drive in to the little country towns. I should say the labourers do not usually attend. The lectures are delivered to the farmers.

2973. Is there any instruction given in thatching or other processes for labourers?—No.

2974. Then you have not taken the labourers into account?—In every parish there is a good school where they can learn a great deal.

2975. (By Lord Barnard.) Can you tell us something more about the constitution of your managing committee? Does it contain representatives of the County Councils of the three Ridings in equal proportion?—I think so.

2976. Does it include any other members?—Yes. It includes 12 members from each of the three Ridings and 12 co-opted members, one of whom must be a woman.

2977. Is the committee well attended?—Yes. It divides its work. The principal committee meets four times a year, but there are, besides, sub-committees. There is an administrative Committee, a Farm Committee, and an Accounts Committee. The latter deals only with finance. The Farm Committee meets every month, and its members, who attend well, are in constant touch with the farmers and with the professors. I should think we have on it about ten or a dozen men who are practical farmers—men engaged in farming.

2978. What would you say to a suggestion that the Board of Agriculture should have a representative on your committee?—We should be glad of that.

2979. You think it would be a good thing?—Oh, yes.

2980. With regard to the course of education, I understood you to say you considered it desirable that a lad should have a year's practical work on the farm after leaving school and before he goes to the University; or the other hand it has also been suggested to us that in that year young lads are very apt to forget a great many of their school subjects, particularly mathematics, and have to spend a certain time in getting up these subjects again?—I should think that if a man was going in for a university degree it would be better for him to keep on at the school for another two years and pick up the manual part of farming during his holidays. In order to meet the difficulty as to mathematics we have engaged a tutor who keeps on coaching the lads.

2981. But that is a difficulty not easy to get over?—It is difficult.

2982. I rather infer from some of your answers that you think it is not, as a rule, the habit of farmers in Yorkshire to send their sons to secondary schools, but surely some of them do so?—The big farmers nearly all do so.

2983. But the Dale farmers do not?—I do not think they do so much.

2984. As to what you said about rates, I understood you to indicate that the present system of rating is a bar to the expenditure of more money upon higher instruction in agriculture because it presses so heavily on the agricultural class?—Yes, it is onerous in agricultural counties. If you want a new rate you have to ask a body who are very much, and to an undue extent, personally interested in the incidence of the rate. If you were to propose in the House of Commons a threepenny income tax for some educational purpose a great many persons would object but that is like the position we are in, because the farmer feel their pockets seriously touched.

2985. In suggesting it is almost essential that any further funds for the development of higher technical instruction must come from the Government you, no doubt took into consideration the fact that it cannot be expected from the landowners?—No, it cannot.

2986. It is almost impossible for landlords to do it out of their profits on land—I mean agricultural land—a distinguished from estates which contain coal?—Fifteen or sixteen years ago many good substantial subscription were got from the great landowners, but landowners are like other people, and when a matter is taken up by the County Council their subscriptions tend to diminish. Some of the original subscriptions probably still go on but the amount has dwindled down, and I do not think we can look forward to replacing it in the future by fresh voluntary subscriptions.

2987. Do you give any instruction in forestry?—We do not like to leave any suitable subject untouched, and we have recently had a proposal to start a little experimental place for forestry. It is a humble beginning, but we do recognise the subject.

2988. Do you think forestry is one of the subjects connected with land that ought to be scientifically taught?—I scarcely know. In the East Riding we are a region of open fields and few plantations. We are not a woodland district.

2989. Apart from your aim to train students for the B.Sc. degree of the University of Leeds, do you give any other certificate or diploma for other courses?—No. The National Diploma can be gained by three winter courses and one summer course. We find that by allowing students to come for one year they often come for a second year, and may continue for a third year, but it would not have been right to prescribe that our courses should be given only to lads who undertake to come for three years.

2990. I gather that you attach great value from a national point of view to research work?—Yes.

2991. Do you consider that even if it be not absolutely essential it is most desirable that research work and instruction work should be carried on together?—I am sure it is. Of course the lecturer cannot be carrying on research work whilst he is lecturing, except in a very modified degree, but in ordinary work one comes across matters which ought to be dealt with by means of research.

2992. You would like to control in your institution both research and instruction, and not have institution totally distinct, and solely devoted to one or the other?—No, I think that would never do.

Mr. J.
Bickerstaff.
9 May, 1907.

Mr. J.
Bickersteth.
9 May, 1907.

2993. I understand you consider it a great advantage to your institution that it is associated with the University?—An enormous advantage. It is very important that the different branches of pure science that bear on agriculture should be taught under the control of real masters of each particular subject.

2994. Is it not one result of your experience and observation that farmers are still progressing in their appreciation of the work which is being done by such institutions as yours upon behalf of their industry?—Yes, I think so. I am always meeting farmers who betray a real interest in what we are doing, whereas 10 or 15 years ago many of them probably would only have laughed at it.

2995. Would Members of Parliament be justified in urging an increased grant on the ground that the more this system is encouraged by the Government the more will that appreciation grow?—Yes, I think so.

Mr. ROBERT FISHER, called and examined.

Mr. R.
Fisher.

2999. (By the Chairman.) I understand you are a tenant farmer and a member of the East Riding County Council Education Committee?—Yes.

3000. And that you have acted frequently as a judge of farms and stock for the Royal and other agricultural societies in this country, as well as in the Argentine Republic?—Yes, I have been there.

3001. I understand you took an active part in the arrangements under which the Garforth Farm was made available for practical work in connection with the Leeds University courses of instruction?—Yes.

3002. Will you give the Committee your view as to its practical value?—I hesitate to give an opinion as to which portion of the work conducted by the Council is of the most value. Obviously the experimental work, the variety tests, and the lectures given upon them, are of more immediate interest to the present generation of farmers, but the courses of instruction given to the students (who are mostly farmers' sons), the classes for the training of teachers, and the more purely research work, are of the greatest importance looking to the future. The farming class have benefited considerably since we began work at our farm. It was not at first anticipated by many of the farmers that it would be such a success as it has proved. There was originally a certain amount of ridicule, and several persons did not look with favour upon it, but now that feeling has been almost, if not altogether, eradicated.

3003. You think experimental work and lectures are of special interest to the present generation?—Yes.

3004. And on the other hand you consider that the training of teachers and research work may be of great future advantage?—Yes; I believe that farmers in future will be more interested in research work. I am strongly of opinion that all branches of our work should be continued.

3005. You consider that expenditure on research work is quite legitimate?—Yes.

3006. And that the farmers would approve of such expenditure being increased by the Board of Agriculture?—I do.

3007. You do not think it needful to provide instruction in the manual operations of farming?—No, I do not think it is necessary that very much, if anything, need be done in that way. A labourer growing up on a farm takes an interest from boyhood in his work, and can pick it up in practice.

3008. I understand you do not think it desirable that any attempt should be made to give specialised agricultural teaching in the secondary schools?—No, I hope that will never be done.

3009. Do you believe that farmers in sending their sons to a secondary school desire that they should obtain a good general education?—Yes. I should like to point out that farmers, whenever they can possibly do so, send their sons to get a secondary education.

3010. You would like to see the number of students going from farms to secondary schools largely increased?—Yes.

3011. And you would encourage their entrance to such schools, and to the University by a scholarship?—Yes.

3012. Can you tell us what you think is the cause why so many sons of farmers are less inclined than they were

2996. Your institution seems to have a very large staff?—They are overworked.

2997. Am I right in understanding that you consider that the scope of an institution such as this is not solely to train farmers' sons, but to increase and diffuse and improve technical knowledge with regard to agriculture generally?—Yes.

2998. For the benefit of all classes interested in, or concerned with, agriculture?—Yes. Every Englishman is interested in the prosperity of agriculture.

The Chairman. I understand Mr. Bickersteth is able to return at a future time for further cross-examination, and that the next witness, Mr. Fisher, is anxious to return to Yorkshire to-night, so I hope the Committee will sanction my calling now upon Mr. Fisher.

to enter upon the career of their fathers?—They are more willing to do so than their fathers are willing to allow them to do so. The conditions of agriculture at the present time are such that many farmers are not anxious that their sons should take up farming. There is so little profit in it.

3013. Are you of opinion that the members of the staff who carry on work in the agricultural department of the college should be as far as possible practical men?—Quite so. I am strongly of that opinion. If we could have our professors and lecturers drawn from the farming class it would be much better than taking them from amongst commercial men.

3014. You want the experiments at the various centres in the county developed and carried out upon a larger scale?—I do, if funds will allow. They interest all the farmers in the district, but in a county of such enormous area as Yorkshire the experiments should be carried on at various centres where the farmers can see them.

3015. There are some experiments which you think ought not to be duplicated?—Yes, there are certain experiments that it is not necessary to duplicate all over the country, and it would be better if each district knew what the other was carrying out.

3016. Have you any observations to make upon the incidence of the rating?—I should like to say that it presses very hardly indeed upon us as farmers, and if it were not for that the farmers would, I believe look upon the spread of education in a more favourable way. I occupy twelve hundred acres of land, and assessed as I am I have to pay something like £35 for education. I think that the farmer should have some relief from the present incidence of taxation. If we were more equitably treated in that respect, I think we should take as great an interest in educational matters as any class of the community. I am rated at £1,000 a year, but a professional man earning twice as much as I do, he is perhaps only rated on £100 a year.

3017. (By Professor Middleton.) I understand that you have found the experiments that you carry on both useful and interesting to farmers?—Yes.

3018. And it is through them that you are more able to reach the farming class?—Yes. The farmers are more interested than they were at first, and now one of the first questions at the farmers' club meetings is, when can we get the Professor down to talk to us.

3019. Would you explain more fully what is in your mind in suggesting that there should be a central committee to ensure that the experiments should not be duplicated?—I think that if we carried on different experiments at separate centres money would be saved and more ground covered.

3020. Would not some of the experiments at Garforth interest farmers in Lincolnshire and Cambridge?—Yes, and they would benefit by our carrying them out.

3021. But the interest and value to the farmer arises largely from the fact that he is able to see the experiment? No doubt there is much in that, but I was dealing with the matter from an economical point of view.

3022. The experiments are duplicated with the object of extending the area of their interest among farmers?—Yes, I am anxious to see that done.

3023. You have referred to the difficulty of getting information as to what is being done in the way of experiment on other farm centres, but are there not always reports published?—Yes, we sometimes see these reports.

3024. In what could a central committee assist you by preventing a duplication of experiments?—If we had a member of the committee of these different centres upon a central board, we should know what they were doing, or if a representative of a central board was upon our committee.

3025. You would like a representative of some central body upon your committee, with whom you might consult?—Yes. We should welcome criticism and advice.

3026. (*By Mr. Latham.*) When you talk about duplicating experiments, do you bear in mind that there is a great variety of different classes of land?—Yes.

3027. And, consequently, are not the same experiments sometimes more useful if repeated in different localities?—Yes, probably so; but there are certain counties that are very similar.

3028. We have had evidence that there may be a considerable difference in the land on the two sides of the same valley, and that the same experiments carried on at different centres might be of great value?—No doubt; I do not object to that. I was looking at the matter more from an economical point of view. I should like to see as many experiments carried on as possible, and that one district should assist another with the results.

3029. You stated that the courses of instruction were given mostly to farmers' sons?—Yes.

3030. Who are they if they are not farmers' sons?—Professor Seton will know better about that than I do, but I should say that the students are principally farmers' sons.

3031. If technical teaching in agriculture is not to be given in the secondary schools, where is it to be given?—When the students come to our classes, or to such places

as our Garforth farm. I don't wish them to have any course in agriculture till they go to the farm.

3032. You think that the practical work and manual training should be given by the farmer himself?—Yes, on his farm.

3033. Your remark about farmers not desiring their sons to be brought up in the same business is, I assume, simply a question of finance?—Yes.

3034. (*By Mr. Medd.*) In regard to secondary schools, what I understand you to mean is that as long as boys are at such schools you want them to have a good general education, and not a technical agricultural education?—Yes.

3035. And when they leave the secondary school they can go to an agricultural college afterwards, preferably with an interval of practical work upon the farm?—Yes.

3036. You indicated that you could obtain reports with regard to experiments elsewhere; but are such reports or information in regard to what is done in other counties sent to you without applying for them?—I think I have had them sent occasionally, but not regularly. It would be a good thing if each agricultural centre did send round their report.

3037. If there was a more effective distribution?—Yes.

3038. At present the Board only sends out such literature if it is applied for and paid for?—Yes.

3039. If such reports and information could be distributed as widely and readily as is done in America, do you think it would be useful to the farmers?—Yes, and much appreciated.

3040. I understand you have in your Riding six agricultural education gardens; is there one in your parish?—No.

3041. You believe that the agricultural training of rural teachers is advantageous?—Yes.

3042. And that the more elementary school teachers are informed upon and interested in rural subjects for rural children the better it will be?—Yes.

Mr. R.
Fisher.

9 May, 1907.

Professor R. S. SETON, B.Sc., Professor of Agriculture, Leeds University, called and examined.

3043. (*By the Chairman.*) I understand that since August, 1900, you have been the head of the Agricultural Department of the Leeds University?—Yes.

3044. I understand you have had large previous experience and are prepared to explain to us your scheme of instruction?—The work of the department may be divided into two parts: (1) The in-university instruction, and (2) the county instruction. The indoor instruction may be conveniently divided into two periods; the first (a) extending from 1891-2 to Session 1898-9, and (b) from 1899-1900 to the present day. In the second period, as Mr. Bickersteth has explained, the whole of our work was reorganised. From the schedule which I hand in (*document handed in*) you will observe that there is a great improvement in the number of students who attended after the reorganisation of the classes in 1899. The present courses provide for only the highest form of instruction in agriculture, and include instruction in branches of science bearing on agriculture. No attempt is made in these courses to give manual instruction in ordinary farm operations, or in hedging, ditching, &c. The present courses extend to 20 weeks in winter, so that farmers' sons can attend between harvest and seed time. For those who can attend there is also a supplementary summer course, which extends to ten weeks. Students may take a course that is complete in itself in two winters without reference to any examination whatever. The National Diploma in Agriculture involves a course extending to three winters. I should not like to say that that is an ideal diploma, but my committee have not favoured the creation of a separate diploma in the University. The University authorities are also against it. They feel that no good would be gained by the multiplication of diplomas; consequently we give nothing in that way to our students who take only two years' courses. For the degree of B.Sc. in Agriculture a student must prepare for his intermediate examination in other departments of the University, and must spend two years in the department of agriculture before taking the final examination. The object of our Council has been from the outset to get hold of farmers'

sons, and give them such a course of instruction as would be of benefit to them in the business of agriculture irrespective of examination. There is therefore no undue pressure brought to bear on students to make them go in for any degree course of diploma, our main object being to give them instruction useful to them in their business. In connection with the indoor course the farm is very useful. We make bi-weekly visits to the experimental farm at Garforth, and the instruction in the class-room is largely made up and illustrated from the results of experiments at the farm. Reference has been made to the staff in our department at the college. I produce the prospectus, which gives full particulars of the staff. There are four lecturers on agriculture, including myself, one lecturer on agricultural chemistry, a lecturer on poultry-keeping, a lecturer on veterinary science, a science tutor, three instructors in horticulture, one in dairy work, and one in farriery. One advantage of our connection with the University is this, that we are able to share the services of the members of the staff in other departments of the University. We get our pure botany lectures, for instance, in the department of biology, and in natural history we have Professor Miall's lectures, &c.

3045. Your teaching staff are recognised by the University?—Yes. They are members of the University staff and are appointed by the University.

3046. No difference whatever is made?—None.

3047. Does the University contribute out of its own funds to the agricultural department?—No. The agricultural department in the University is financed entirely by the three County Councils.

3048. When your students attend lectures in other departments I presume payment is made for that?—Yes.

3049. Students can obtain the National Diploma after three winter courses?—It involves three winter courses and one summer term, although the students who attend are chiefly farmers' sons, there are some who are land-owners' sons and others who are prospective land agents,

Prof. R. S.
Seton.

Prof. R. S.
Seton.

9 May, 1907.

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whereas some do not intend to farm in England, but contemplate going to the Colonies. We cannot say that the students consist entirely of farmers' sons. The students are drawn mainly from Yorkshire, but a few come from other counties in England as well as from Scotland and Ireland. Indeed, we occasionally have students from foreign countries. No student is admitted below the age of 16 years, the average age on entrance being about 19. Although I see some improvement in the education of students who come forward year by year, we find that as a rule their state of general education when they come to us is not so satisfactory or so advanced as it ought to be. That applies not only to the sons of the poorer farmers who have only attended an elementary school, but also to many of those who have come from secondary schools. I am of opinion that it would not be wise to specialise on a technical subject like agriculture in elementary or secondary schools. I don't mean that it would be advisable not to deal with sciences such as chemistry or botany which have a bearing upon agriculture, but I think that no attempt should be made there to give instruction on a technical subject like agriculture. We would rather deal with a student who had had a good sound general education, perhaps with a little chemistry or even without it, than with a lad who had a smattering of science as part of his course of instruction in agriculture. It is impossible to lay down any hard and fast rule as to the age at which students ought to enter. In any case, it is desirable that before coming to us students should have some practical knowledge of farm work in all its details. Better results are obtained with a lad who has left school and worked on a farm for a year or two than with a lad who comes straight from school, but without practical acquaintance with farming. We find we can in the end turn out a better product if we get a lad who has spent some years on a farm after he has left a secondary school, even although he may have lost touch with mathematics and other subjects. Moreover, he has had more years on his shoulders and can understand better what we talk about because his mind has been developed. At the same time I do not think any rule could be formulated to the effect that a lad must not go to the University straight from school. Lads differ very much and there are differences in particular cases. I have known students who have come to us straight from a secondary school and have simply spent their holidays working on the farm, and have proved apt pupils and have done well in the end, but these are rather the exception.

3050. Perhaps you have given some thought to the curriculum which you deem desirable at a secondary school, preparatory to entering the agricultural department of the University?—No, I am afraid I have not done so.

3051. What I wanted to ask was whether you are of opinion that the elementary science taught at secondary schools is an advantage when the students begin their course at the University?—Yes, I can go so far as to say that it is an advantage if too much science is not attempted.

3052. If it is strictly elementary?—Yes, and not specialised or biased towards agriculture.

3053. You have stated that you would rather a lad went back to the farm after leaving the secondary school, even at the risk of forgetting what he had been there taught?—Yes, because I find there are so many compensating advantages from a lad having become acquainted on the spot with the practical details of farm work. We provide a science tutor who helps to make up for any lapse in their general education. He takes a class for an hour or two a week and deals with mathematics, arithmetic, mensuration or other subjects useful to them. We find that if a lad does not drink in the practical parts of agriculture when he is young, he takes it in with greater difficulty when he becomes older. With regard to the proportion of those who go back to farming as an occupation, it has been rather difficult for me to follow that out. The figures I have prepared are only approximate. Taking the list of students who have attended since the reorganisation of the classes, their subsequent career may be indicated as follows:—

	Per cent.
Farming	75
Estate agents	8
Auctioneers	6
Estate managers	6
Lecturers	5
Secretary of farmers' club	6
In an agricultural business	4
Chemist	6
	99·8

It will be seen that 75 per cent. of the students have gone back to their fathers' farms or have taken farms for themselves, and I often have the pleasure of meeting young men who passed through the courses two or three years back; these pupils are always ready to refer to the University any problems that present themselves, and they are almost invariably most willing to help in any further experimental work that may be set on foot. Some of the old students have been attracted by positions abroad—several are holding responsible positions in Egypt, others are in the Argentine Republic, but in almost all cases they have close business associations with this country and, looking at the matter in the broadest sense, I hold that they are a distinct national asset.

3054. Do you give any lectures on book-keeping?—Yes. I hand in a syllabus of our courses of instruction (*handed in*). The Committee will understand that the same staff carry on the teaching work at Leeds and Garforth, the extension lecturing and all the other branches of work in the county. Members of the staff are in this way busily engaged during the whole year. In the winter the university courses and extension lectures demand most attention. In the summer the experimental stations are in progress; school gardens throughout the county are in full work, and there is a constant succession of visits of parties of farmers to the farm at Garforth for the purpose of inspection of variety tests, &c. It is quite a regular thing to have at the farm at Garforth parties of 40 or 50 farmers day after day. These parties are often arranged in connection with farmers' clubs, and in this way cheap fares are obtained to Garforth. The members of the staff attend and explain to these parties what is being done. I encourage the members of the staff to take every opportunity of coming into close personal contact with the farmers on all possible occasions, and I am certainly of the opinion that this is the most satisfactory, if not the only way of gaining the real confidence and support of the agricultural community, which is, however, a matter of time.

3055. Do the farmers visit Garforth in order to make enquiries?—They come to make a tour of inspection, and to witness experiments at Garforth. The groups of visitors may vary in number from perhaps half a dozen to nearly 80.

3056. And now perhaps you will tell us something about your outdoor or county work?—This work may be conveniently divided under the following heads:—

- Demonstration and experimental work in all branches of agriculture is carried on at the Manor Farm, Garforth, and certain crop experiments are also arranged at other centres.
- Lectures in the county on agricultural, horticultural, farriery, and poultry keeping subjects, and demonstrations on butter making.
- Practical instruction in horticulture, including outdoor demonstrations in gardens, educational gardens (for adults), and gardens attached to elementary day and evening schools.
- Training course for teachers who are to take charge of day and evening school classes in horticulture.
- Instruction in farriery by means of lectures and practical classes at selected centres.

Experiments with crops have been carried on more or less since 1891, but this branch of the work was greatly developed in 1898 by the acquisition of the experimental farm at Garforth, when it became possible to include experiments with stock. The number of experiments conducted in the county since 1896 has been 190, apportioned as follows:—Meadow hay, 14; clover hay, 6; nationalities of clovers, 15; pasture, 4; rotation experiments, 2; barley, 7; oats, 16; swedes, 57; mangels, 3; potatoes, 66. In order to obtain reliable results the experiments have often to be carried on for a considerable number of years, and the results naturally become of increasing value as time goes on. The results are of distinct value as affording material for lectures both to students in the University and farmers in the county. The courses of lectures in agriculture, horticulture, and poultry keeping now consist chiefly of five lectures given at weekly intervals in the evenings. Courses of 10 and 12 lectures used to be arranged, but for the past few years, in order to meet the increasing demand for lectures, the courses have had to be curtailed to five meetings. In a few cases afternoon lectures have been arranged, but judged by the attendances have usually been only a partial success. The lectures generally have been appreciated, and this is shown by the number of centres that make renewed application for further courses of lectures. The lectures enable the members of the staff to get into close touch with the

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farmers, and when requested the lecturer visits the farms of some of the members of his audience and discusses matters on the ground. This also enables the lecturers to come into contact with farmers' sons and to explain to them the nature of the courses provided by the University. The courses of lectures on horticulture and poultry keeping have always appealed to much larger audiences than the agriculture lectures, especially seeing that in Yorkshire there are large urban and semi-urban districts. The lectures given and the average attendances since the work began have been as follows:—

—	No. of Lectures.	Average Attendance.
Agriculture	4,613	35
Horticulture	3,140	49
Poultry keeping	1,493	68
Butter-making demonstrations	87	53

3056c Practical Instruction in Horticulture.—This instruction takes the form of outdoor demonstrations in gardens during the summer months. Evening school gardens have been established, in which the pupils are under the charge of a specially trained teacher, whose work is supervised by the University instructors in horticulture. Educational gardens for adults have also been organised. These gardens are usually the outcome of courses of indoor instruction lectures given during the winter months, and are generally established on allotments. I am of opinion that the instruction given in the evening school gardens has been most effective, especially since it has been possible to organise a course of instruction at which elementary school teachers are trained to take charge of the classes. The number of evening school gardens has increased from 7 in 1895 to 22 in 1907. There are also now 9 day school gardens and 15 educational gardens.

3057. In the case of the educational gardens no fees are charged?—No.

3058. Does the expense fall entirely on the Council?—No. The rent of the land is met by the members of the class. The only expense to which the Council are put in the matter is in respect of seed, small amounts of artificial manure, and, of course, some proportion of the salary of the instructors for the time engaged.

3059. (*By Lord Barnard.*) Who provides the land?—It is generally connected with allotments, and a portion of the allotment is set aside for the purpose of the educational garden. In addition to these educational gardens we have gardens attached to evening schools, which have been in existence for some years. Lately the authorities of the East and West Ridings have asked us to superintend the work of the gardens attached to certain elementary schools. They have asked our instructor to visit these day school gardens and superintend the work.

3060. What about the training of teachers in horticulture?—That is done by means of classes in horticulture and experimental plant physiology conducted at the Manor Farm, Garforth. The classes are held on Saturdays, and extend from September until about the following May. Pupils must attend for two sessions before they are recognised as qualified teachers of horticulture. The number of teachers in attendance on the course has increased from 9 in 1901–2 to 36 in 1906–7. The total number of teachers who have been trained during these years has been 78.

3061. Are the teachers in evening schools specialists with regard to horticulture, or do they teach other subjects as well?—They also teach other subjects. They are generally day school teachers. It was at one time thought that between the visits of the instructor the gardens might be superintended by some neighbouring gardener, but we found that the ordinary gardeners were not capable of teaching and had no sufficient idea of discipline. After the teacher obtains his training in horticulture, he is not left high and dry, but his class is periodically visited, and so is the garden.

3062. Are these teachers examined after they have gone through their course?—There are no examinations at all, and no certificate given.

3063. (*By the Chairman.*) Do these teachers come from rural or from town schools?—From both, but the great majority come from rural schools. It is only by special arrangements that we are allowed to take in teachers

from town schools who are under a different education authority. Our work is organised by the county.

3064. Do they come from any great distance?—Yes. Some have to leave home about 6.30 in the morning.

3065. Do they get any compensation or travelling expenses?—Yes. The County Council offers them a scholarship and some contribution towards their travelling expenses.

3066. Are the lectures given in winter or in summer?—They begin about the middle of September and finish about the beginning of May, going right through the winter. It may be thought that we miss the most important season—the summer—but it is not possible to get the teachers to attend throughout the whole summer. And where a garden has been established our instructor is frequently visiting it and sees that it is kept right, so that there is not much missed. If we did not give way upon the question of attendance during the summer months, I am afraid we should not be able to get the teachers at all, as they are members of cricket clubs, &c., and naturally do not want to lose touch of their own districts.

3067. If they attend one year do they occasionally also attend a second year?—They invariably attend a second year. The West Riding authorities ask us, before they allow a teacher to undertake the teaching of horticulture in evening schools, if such a candidate is qualified, and if the candidate has not attended a two years' course we do not approve of his being registered as a teacher of horticulture, and the West Riding authorities accept that view. The subject of experimental plant physiology is selected in order that teachers may be able before their pupils to deal with a plant as a plant without reference to its technical importance—to deal with the leaf or flowers, or to give simple experiments with regard to the circulation of sap, which interests the pupils in what may be called nature study. It might be advisable and probably useful to introduce other subjects into the course. I think that as at present arranged I should prefer to see experimental plant physiology retained along with horticulture, rather than see another subject introduced and this one removed. The lecturer, instead of giving a lecture, deals with various plants, asks questions of the teachers, encourages replies, makes some use of the microscope, &c. When the teachers have taken these courses, they are able themselves to conduct classes in a way that is bound to influence their pupils for good.

3068. Are the experiments in crops to which you have referred conducted throughout the three Ridings?—The North Riding has not yet seen its way to arrange for such experiments, but they are conducted in the East and West Ridings. With regard to our lectures, I hand in a pamphlet giving a list of the subjects with which our lecturers are prepared to deal. The pamphlet is circulated amongst agricultural clubs, district councils, &c., so that farmers have convenient opportunity of choosing any special subject upon which they would like courses of lectures.

3069. Who pays the lecturers?—The Agricultural Department. The local committees are asked to provide a suitable room, a table, and gas.

3070. What about the instruction in farriery?—This branch of work was started in 1903. It includes instruction by lectures and practical demonstrations in the forges in the different localities visited by the instructor. On the conclusion of the course in a particular district arrangements are made for an examination, conducted by the Farriers' Company, the passing of which entitles the successful candidate to style himself Registered Shoeing Smith. The instructor, in visiting a district, does a little pioneer work by coming into touch with the master smiths, and enlisting their sympathies for the formation of a class. I should like to say that this work is still in an experimental stage, and we are not quite certain whether it will be advisable to continue the work; but there is no disposition on the part of the County Council to discontinue it if it gives satisfaction and proves useful, and I think up to the present we have reason to be encouraged. The instructor has to meet with a certain amount of opposition or prejudice on the part of some of the smiths, but he has been able to get hold of many of the apprentice smiths, and to deal with the subject of practical shoeing in the forges.

3071. Do the farmers appreciate the result?—Yes. They want a better system of shoeing.

3072. Does the prejudice on the part of the smith still exist?—Not so much. There may be a certain aloofness, but that will wear off after a time. There is more prejudice, however, in the case of farriery than in the case of agriculture.

Prof. R. S. Seton.

9 May, 1907.

Prof. R. S.
Seton.
9 May, 1907.

3073. I understood you to say there are different classes of gardens in which you take a practical interest?—Yes, three classes: (1) Educational gardens in connection with allotments; (2) evening school gardens in connection with evening classes on horticulture; and (3) what may be called day school gardens.

3074a

3074. I think you have something to say with regard to the attitude of agriculturists towards your work?—I can testify to the sympathetic attitude of Yorkshire agriculturists of all classes towards the work as a whole. Whilst lecturing in the county it is the exception to find anyone expressing an adverse opinion as to the value of the work. Occasionally there is at new centres a certain aloofness, but this disappears when the audience realises that the lecturer is prepared to deal with a specific agricultural topic and to discuss thoroughly with his audience the technical problems arising therefrom. Perhaps the greatest interest is taken in the experimental work, since agriculturists are always ready for any information as to the relative merits of different varieties of crops or the effects of various manures. From time to time the results of experiments are distributed in the form of reports, which are written by members of the staff of the department. Year by year a greater number of enquiries are received for information on specific practical problems, and in many cases these enquiries can only be properly answered by a personal visit of a member of the staff, so that he may see for himself all the conditions and therefore be better able to give sound advice. I do not feel that I could point to any part of the work as being more important than the rest, as I regard the various parts of the scheme at present in operation as organically bound together and reacting upon each other. To secure substantial and permanent results there should be security that the work will not be interrupted in any way, *e.g.* through lack of funds, interference in administration, &c. That developments ought to take place there can be no doubt, and, in my opinion, there is a crying need for more real research. Members of the staff at present devote any spare time from teaching to the preparation of popular reports upon the various experiments that are being conducted, but there is practically no provision for such research as would require the freedom of the investigator from any other claims upon his time. There is ample room for such research in dairying, in the rearing of and diseases affecting stock, in the subject of entomology, and, of course, in the whole range of crops and new varieties of the same.

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3075. You are of opinion that there ought to be fuller opportunities for research?—Yes, for some members of the staff, but I would distinguish between research and ordinary experiment. It may mean the entire abandonment, for the time being, of a man to research alone, leaving him no opportunity to take part in teaching. I do not, however, mean that a member of the staff should continue to do nothing but research; we have not yet reached that stage where any single member of the staff would be spared for research, and research only. We

cannot provide for that at present. I may mention that we have a certain amount of research conducted by the instructor in cheese-making at Garforth and on the Continent. I have here a printer's proof of an account of certain researches conducted during the past few years and commenced at Yale University by Mr. Coward. The Yorkshire Council for Agricultural Education voted a certain sum so that he might go to Yale in order that he might get into touch with Prof. Chittenden, from whom he wished to get information on a specific point as to compounds found in cheese. This is research which may not appeal to the popular imagination, and the report may be too technical for general reading by practical cheese-makers, for it deals with chemistry and bacteriology, and it is an important piece of research such as I should like to see greatly developed in the future.

3076. I suppose you think it would be advantageous if some of your scientific experts could devote themselves more to research and less to popular lectures which might be undertaken by others?—Yes, in certain cases. If a member of this staff is not fully alive to the requirements of agriculture, whether in dairying or other work, he may not direct the lines of his research in the way that practical men would like to see. For instance, there is a question about clover sickness in Yorkshire. Mr. Fisher has reported to me that he cannot get red clover to grow in certain places, and he does not know the reason. We have done a little to investigate it, and the Board of Agriculture has done a great deal more. We carried out a little experiment on the subject at Garforth for the Board of Agriculture, but we feel it would, if possible, be desirable upon such a matter as clover sickness, which is important to East Riding farmers concerned in a four-course rotation, to have a man appointed to study that for a year or two. So, in the case of milk contamination, to gain reliable information would always involve setting aside a man to do nothing but investigate that one problem.

3077. Do you think the Board of Agriculture ought to give more aid to research?—I don't care where the money comes from, but I look to the Board of Agriculture first for this special work, which I am certain is bound to result in practical utility. I should not like a research man to set out with the idea that he must strive after a certain practical result, but one might indicate to him what lines his research might follow.

3078. You want the man engaged in research to be independent of practical result, and work only upon scientific lines?—Yes.

3079. I understand you think that economics should be taught?—Yes, having regard to the fact that Britain is supplied with a large amount of farm produce by foreign countries, it seems to me that great benefit to students would arise from the inclusion in their course of study of the subject of economics.

SEVENTH DAY.

Tuesday, 14th May, 1907.

PRESENT:

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

The Lord BELPER.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. JOHN BICKERSTETH, recalled and further examined.

Mr. J.
Bickersteth.
14 May, 1907.

3080. (*By Lord Barnard.*) On the question of the total expenditure, what figure did you give for that?—I think I gave £8,000.

3081. £1,000 in all comes from the Board of Agriculture?

—Yes, and £200 of that is earmarked for experiments. Therefore there is only £800 as a general contribution to the fund of the institution or the enterprise.

3082. Then how much do the County Councils

contribute?—The County Councils contribute not quite £7,000. The West Riding gives £3,000, the East Riding gives £1,750 I think, and the North Riding gives about the same.

3083. Are there any other sources from which funds are derived—are there fees?—There are fees, and, I believe, there are still a few remains of subscriptions of various people, but that is a very small item.

3084. You do not anticipate any increase of subscriptions, do you?—No, they must be a diminishing and vanishing source of income. The fees might, of course, increase, but they would not be a substantial amount.

3085. What sort of number of scholars do you pass out of the institution every year. Do you know that at all?—I think Prof. Seton would be able to give the number each year. I think there were about 50.

3086. Do you anticipate (it does not much matter as to the exact amount) an increase of them now?—Yes, I hope the farmers' sons who attend our winter course of twenty weeks will increase. I have no reason to doubt that they will increase. The interest of the farmers is more and more attracted to the work they are doing.

3087. Of course, I quite realise that the education of students is not your only object, but at the same time, a very large proportion of these funds is spent on them, and what crossed my mind was that it was a very large sum to expend on a comparatively small output?—Yes.

3088. Do you anticipate that you will in future years turn out a larger number of finished scholars?—We shall turn out a larger number, I hope, but not so large a number that if the number is divided amongst our total expenditure we shall not incur the charge of spending much. You must remember that, in addition to our own college students, we have our lectures with very high averages of attendance, and we do a great deal to interest and instruct the farming community by the lectures given at the different centres.

3089. In other words the work done by institutions such as yours, must not be measured by the number of students?—It never can be.

3090. You think if anybody were to state that you have a very large expenditure with apparently very small results, that would not be a correct statement at all of the position?—No, it would not. It would require explanation, and the explanation could be given if it were asked for.

3091. In fact, the work done by your institution is, strictly speaking, not education at all?—No, I think I have put it before that we do claim to use our funds for the benefit of the industry.

3092. (*By Lord Belper.*) From your evidence in chief I understand you were asked a question about whether you were in favour of some consultative committee. I presume it would be a consultative committee for the Board of Agriculture to consult, and I conclude the consultative committee would be in some form or other representative of those who were engaged in agricultural education in the country?—Yes, one of the Committee asked me whether I should be in favour of a consultative committee. I was thinking of a committee something like the consultative committee that the Board of Education appoints in their work. I should be sorry to think that a committee was appointed who would, if I may say so, interfere with the details of our work. I think in Yorkshire we are large enough to have a committee to manage our own affairs. I should express approval of the idea of a consultative committee if it meant that we should have a body to whom we could go who would have stronger influence with the Treasury and get us money for a variety of objects when we wanted it. In our work from year to year, occasionally it happens that we can see that some question ought to be investigated and answered, and the answer to which cannot be written down in pounds, shillings and pence, and which ought not to be undertaken by bodies with limited funds. There you trench upon the amount of the research that occasionally we are called upon to initiate. I mean we must in our work occasionally come across a problem which requires investigation, and I would like to have a sort of consultative committee to whom to go and say "This is a problem which suggests itself to us, will you advise your Board to act liberally with us, and give us some money." A rather curious case occurred the other day. We have a man who has done some good research work in the processes of cheese making, who went on his holidays to Switzerland in order to find out the answers to some problems on which he was working,

and he found out that the Swiss Government were working on exactly the same thing. The Swiss Government has been spending £4,000 on working on that particular problem, while we in our poverty scraped together £30 for this poor fellow who went over at a cost of £50. He being an enthusiastic worker found it out of his own pocket, but when he came back what he told us was that the Swiss Government were able to spend £4,000 on it. I should like to have a committee to whom we could have then gone and said "Here, can you not get some money for us?"

3093. Then I think that the success of your consultative committee would depend very much on how that consultative committee was appointed and who they were?—Yes.

3094. And also on what duties and powers were given to them?—Yes, I should be very sorry to put our neck under the yoke of an unknown body, but I can imagine under the name of a consultative committee a very valuable aid to this kind of work being established.

3095. If you could get a committee that was largely in touch with the chief institutions for agricultural education of the country, they might be a go-between between you and the Board of Agriculture, who would do very useful work and help you in work that you wanted to bring to their attention?—Yes, they might help very much in the way of doing the work. You might do under that name work which now others do to a certain extent. They might tell us what particular work is going on at institutions of a like character. As to Garforth, it would be a pity for us at Garforth to duplicate your experiments at Kegworth, for instance.

3096. You get some grants for research work now, do you not, which is done by the professors engaged with your experts?—I am sorry to say we have nobody who is engaged on research work.

3097. You have no professional people?—No, Mr. Brooke-Hunt will say if I am wrong, but I believe the £200 is given to us for some experimental work at Garforth. It is not exactly research work.

3098. I thought perhaps you might have, as we have, a scientific member on your staff engaged in research work. We have one, and he has a large grant from the Royal Society for some special work in research?—No, we have never done anything of that kind—we have not had that.

3101. Then your institution gets a grant of £1,000 altogether?—Yes, including £200 for experiments, and there are three County Councils which contribute to the agricultural department of the University.

3102. Then practically the whole of the agricultural work, I suppose, in Yorkshire goes through the agricultural department of the college?—Yes, everything, except in the case of the North Riding where before they joined with us they had a man who did very good work in Wensleydale cheese. That is separate from our work, though he comes occasionally to the University when he is not working in the Wensleydale district.

3103. I think you have already said in your evidence that you would not be adverse to having a larger grant than you have at present?—There is no doubt about it that we ought to have a larger grant.

3104. Have you formed any judgment as to what would be the best way for these grants being allocated—on what principle?—I am afraid my conclusions on that point are rather negative. I should be sorry that the grant was given for the number of students, and I do not see that there is any particular shibboleth or test which would fairly give us the grant we ought to have. What we would like is to see our work judged by the department—judged by somebody who had control of the money, and if we are doing good work we ask for a liberal contribution. We say that £1,000 out of £8,000 is not a liberal contribution, and we ask for a more liberal contribution.

3105. Have you had that £1,000 for some little time?—Yes, we had £800 at first, and the £200 must have been given us five or six years ago.

3106. Then you mentioned in answer to a question that you would not like it to be given purely according to the number of students?—No.

3107. In fact that would have to be very carefully checked for fear that you should increase the number of your students at the expense of the teaching that you were giving to particular students?—Yes. I believe you could get more students by lowering the standard of your work. If you keep up the standard of your work your classes are not quite so popular. There is no doubt that if students are to benefit to the full extent by lectures of anything

Mr. J.
Bickersteth.
14 May, 1907.

Mr. J.
Bickersteth.
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14 May, 1907.

like the university type they must have had a general education before they come to us. A general education supplies the place of some kind of examination test, and any kind of examination test keeps off students.

3108. That is to give them as far as possible the education available by the Board of Agriculture?—Yes.

3109. And that requires larger funds?—Yes.

3110. And more skilled professors?—Yes.

3111. And distributing themselves over the shorter course?—Yes. You use the word more skilled professors, but it seems to me that those who are dealing with educational work must go in for the very best education, or it is perfectly worthless. I do not admit the existence of a second-class professor. If you want education, you must get the best man you can.

3112. Do you take in students from outside?—Yes, we do. We have paying students from outside.

3113. The evidence we have is that those institutions that take in a certain number of the highest class of outside students, and are giving the best possible education as in your case, keep up the standard of the college?—Quite so.

3114. That is because you are including in your college those who want the highest possible education?—Yes. It has been once or twice discussed on our committee whether we should raise the fees to outsiders, to out-county men, but we have always held the opinion that so long as we claim to be doing anything like university work we must welcome the whole world as they come, with the consciousness that the better the men who come the more chance we have for our students by association with brighter minds.

3115. Then with regard to one other test, should you say that, considering the different circumstances and conditions of different colleges and institutions, the salaries alone would be the fair standard to take for the amount of the grant allotted to one college?—No, I should not like that test, though I think, as far as we are concerned, or as far as Yorkshire is concerned, if that test was adopted we should benefit as much as any county in England, and yet I do not think it would be quite fair to take that as a test.

3116. I put it to you because it seemed it might be as great an advantage to you as any other college?—Yes.

3117. But at all events your view would be that you would not take salaries as a test, and you say that there ought to be other claims for consideration?—Yes. Any responsible department that goes into an investigation of the whole question of the efficiency of an institution must take into account an examination into the adequacy of the salaries they pay to their staff. I should not like to take amount of salaries as the one test.

3118. (*By Lord Moreton.*) Do you do anything as regards teaching young labourers?—No.

3119. You have I think a good deal of experience of education in regard to the National Diploma Board?—Some of our students take it.

3120. Do you consider that that is doing useful work now?—I am afraid I am not competent to give an opinion as to the merits of that particular examination. From an administrative point of view it has been useful to us as giving an alternative to the full degree examination in agriculture. At the University it is possible to take a degree, taking up agriculture as a science for boys or lads who do not want to go in for that. The National Diploma affords a recognised test, and it has been useful in that sort of way.

3121. In other words you consider that the University degree is a great deal more valuable than the Diploma?—It is a higher standard.

3122. Have you had any experience of the dairy examination conducted by the Diploma Board?—No, we do not carry our dairy students very far. We have a sort of arrangement with the Midland Dairy Institute that those who wish to go in for an advanced dairy course should go there, and from the three Ridings of Yorkshire, from time to time, we get a candidate who wishes to go in for the full dairy course, and we give a studentship at the Midland Dairy Institute rather than at Garforth. Our courses at Garforth are in practical dairying. They do not carry the students so far as the course at Kegworth.

3123. (*By Mr. Latham.*) Will you explain what your 10 weeks' course for farmers' sons is?—I ought first to say we have not got a 10 weeks' course. We began with a 10 weeks' course some years ago, and that was succeeded

by a 20 weeks' course in the winter. I believe, though Prof. Seton could give the details of it, that the students who go for the winter course, not the 10 weeks' course are taught side by side with the first year students for the University or the first year students for the National Diploma. Prof. Seton would be able to explain, in detail, what is taught them.

3124. You say you have made it possible for farmers' sons to come to Leeds for a winter course?—Yes.

3125. What does that embrace?—In any one of the three Ridings of Yorkshire if a farmer's son wishes to come to Leeds for a winter session he sends in an application with a guarantee that he is a proper man, and those applications are considered by a special committee of my council.

3126. Will you kindly say what the special guarantee is?—The only guarantee is that he is a farmer's son or intends to take up farming as an occupation, and really honestly wishes to benefit by the course.

3127. Do you find that they go to two scientific winter courses as a rule?—Yes, they do now. Those that come for one winter often stay for two consecutive courses.

3128. And the summer course?—Not always. Some of them come for the winter course and go away, some of them come for two winter courses, some of them come for two winter courses with a summer course in between. We make it easy for them to come for a short time if they cannot come for a long time, but we find very often that a lad who comes once persuades his father to let him come again. We do not insist before they come that they shall promise to attend for a whole year or two years.

3129. Do you say the three County Councils will grant scholarships?—Yes.

3130. Of what type are they?—The scholarships are specially awarded on the recommendation of the Committee, who satisfy themselves that the candidates are likely to benefit by the course. There is a very simple test examination which is not a competitive examination, and in the East Riding, as to our scholarships, we could give more than come. In the North Riding, I think I said the other day, the applications are rather more numerous and they are not able to take them all. The applications from some of the small farmers in the dales of the northern parts of the North Riding are more numerous than the applications from districts where the larger farms are.

3131. Are those scholarship students that go in for these two winter sessions and the summer session?—Yes.

3132. Is the summer session more practical than the winter session?—That, I am afraid, Professor Seton could better answer. All through the winter as well as the summer they attend two days a week on our farm at Garforth. The farm is about eight miles from Leeds.

3133. How far does the veterinary attendance go?—I could not tell you that.

3134. How far does your farriery instructor go. What class of instruction does he give?—That is a question which I am afraid I am unable to answer. His classes consist of blacksmiths.

3135. You say "The conclusion I have arrived at after experience in the work of the University Departmental Committee, the Joint Committee on Agriculture and of the Education Committee, for my own county is, that the work of agricultural research and the provision of agricultural education from the University to the village school should be controlled by the same body." Is that what you think is the principal thing to consider with regard to young farmers?—Research?

3136. Yes?—No, I do not think so. I think if I were to limit my commendation to research I should be wrong. I think that where we help a farmer is by bringing him into actual touch with the conclusions that scientific men have come to. Of course, research work presumes rather that the scientific man is going on to fresh fields of experimental work. We reproduce at our demonstration class and at our farms the conclusions which have already been arrived at by scientific workers, and that is one of the strongest reasons for our existence. We make the worker in the industry come into familiar touch with the conclusions which the trained observers, the scientific men that is, have arrived at.

3137. Have you come to the conclusion that this teaching process is unduly high for an agriculturist?—That the agriculturist has to pay too much for it?

3138. Yes?—I think so.

3139. Although it is for their benefit?—I think according to their ability they pay most liberally, but I think that the limit of their ability is nearly reached, and that

further developments which we must look forward to ought to be assisted from Imperial sources.

3140. That is, that if the Board of Agriculture had more funds it would be a great benefit to this work that we are now concerned with?—I think so. I think that we should be able to develop and improve the foundation we have already laid.

3141. You made the remark that there was a winter staff continually engaged in giving lectures. What sort of lectures are they, may I ask?—They are lectures given in the various districts on the application of farmers' clubs. We have a list of lecturers with the names or topics of their lectures, and the farmers' clubs ask for a particular lecture. But the lecturers have general instructions to stick as closely as they can to the facts afforded to them by the demonstration plots that are in the neighbourhood of the place where they give the lecture.

3142. You go on to say that "When we began our work we found the farmers inclined to doubt whether we could do them any good, and inclined to ridicule our efforts." Is that decreasing?—That ridicule is certainly decreasing. We are gaining the farmers' sympathy and support in our work.

3143. And confidence?—And confidence.

3144. You say you get rather different types of students from different parts of the county?—Yes.

3145. Will you just explain what type of students you get altogether?—We get the sons of large farmers, well-to-do farmers. Rich farmers send their sons to us. We get sons of men who are land-agents themselves, and we also get the sons of the small farmer, the farmer, that is, who is a working farmer.

3146. What percentage of these students are purely agriculturists?—Professor Seton has an interesting table, and he has worked it out, I think. He has put the table in. The percentage of our past students who actually go in for farming is 75 per cent. They have gone back to practical farming and the others have gone into occupations kindred to farming. It is an interesting table and I think it was put in.

3147. Do you agree that work on the farm is very beneficial to the agriculturist?—The farmers tell us so.

3148. I think it was you who gave us some illustration of what was going on with the milk in your county. We should be very glad if you could go further into that.—Yes. There was a suggestion made to our Council that an investigation might usefully be gone into in connection with the amount of contamination which milk receives from the moment it leaves the cow till the moment it reaches the throat of the consumer. I think people thought that the country was, perhaps, too much blamed for all the pollutions that are ultimately found in milk, so we began an investigation. That means the analysis and bacteriological examination of six samples of one consignment of milk. It is analysed when it comes from the milking shed; it is analysed on the railway; it is analysed in the railway dock and it is analysed in the shop; and it is even examined after standing in the consumer's house for a few hours. That investigation has only just begun, and I do not know what the result of it will be.

3149. Will that be published?—I hope so. It will last certainly for a year. It is not conducted under the direction of the Yorkshire Council for Agriculture, because they felt that they had no funds for that; but it is being conducted by the sanitary committees of two County Councils and four or five County Boroughs. All the Yorkshire Council of Agriculture has done has been to provide at Garforth, our farm, laboratory accommodation for the expert who has been specially engaged by the sanitary committees.

3150. Does that cover a large surface?—It will consist of consignments of milk, and analyses of milk sent from a good many places into a good many towns in Yorkshire. That is all.

3151. (By Dr. Somerville.) A very large proportion of students who come to the College or University of Leeds are supported by county scholarships, are they not?—Yes.

3152. Do you apply any test of minimum income as regards parents whose sons are appointed to scholarships?—No, we have not yet done so. I think the committee would if there was a conflict. If it was necessary to distinguish between them they would give preference to the poorer parent, but there is no test laid down for them.

3153. I suppose that the number of scholars that are thus supported, and have in this manner educational facilities put before them, is a very small one when the whole of the agricultural population is taken into account?—Yes.

3154. As regards the others, then, that are not fortunate enough to get scholarships, I take it that their technical education in agricultural science is only provided for through the agency of these local lectures?—That is all.

3155. I suppose these local lectures are less educational than instructional?—Certainly they are instructional.

3156. Now, I notice that in the *précis* of your evidence you deprecate the formation of local agricultural schools; is not that so?—I should deprecate the establishment of agricultural sides to secondary schools.

3157. You would not, perhaps, go so far as to deprecate the establishment of agricultural schools of a type somewhat different—one might almost say somewhat lower—than the type of instruction that is given in the University?—I am only expressing an opinion, but I should not be in favour of the establishment of such schools. One of the greatest evils of the farming profession is the "grooviness" and narrowness which seems to prevail. The farmer goes on going to market as his father and grandfather went, and if, instead of sending his boy to an agricultural school, he sent his boy to a high school, where he would sit down side by side with boys whose relations had nothing to do with farming, I think the boy would get a lot of good.

3158. I am not thinking of an agricultural school, or the agricultural side of a secondary school, as a preparation for the University. I am rather thinking of it as providing the only technical education in agriculture that seems possible for the bulk of your youthful agricultural population. How are they going to receive any direct instruction if the whole of your agricultural work is done in that way?—By apprenticeship.

3159. That is as regards the manual processes and the commercial side of the business; but surely there is a certain amount of science that must be very useful to a farmer, even if it is not of a higher type, and is not itself absolutely exhaustive?—I do not think it would be possible in a scattered district like ours to have many centres of real light in the place. If you have an agricultural school that is not quite of the best kind you would be doing more harm than good. We want to get hold of those who are entering from the lower grades of life and from the labouring classes into the farmers' class and make them understand that our best farmers like to be in touch with our professors.

3160. I suppose that most of the scholars that come, that is scholars in the sense of a student receiving support, reside during the academic period in the town?—Yes.

3161. That is to say they do not travel daily to any great extent by rail, do they?—No. I should think probably we should find that nearly all of them come from the country districts. We give them a maintenance allowance.

3162. In the North of Yorkshire, for instance, is it not conceivable that it would be an advantage to have, not what I should call inferior education, but education of a type which is not carried so far as, we will say, to make a man capable of carrying through a chemical analysis, but still going far enough to enable him to judge of the value of the figures that indicate the chemical analysis of, say, a manure; and would it not be well to give such instruction as would enable him to measure areas of land, and give him instruction in the principles of nutrition, and the value of the constituents of cattle foods, and such like things?—My answer to that is that it would be absolutely impossible to have universal specialisation in our secondary schools. But, taking what you say, we want the farmer to be sufficiently educated to appreciate the relative values of the constituent elements of some particular manure, and he is more likely to understand the importance of that if he has received a good education in a good secondary school than if he has devoted all his time, or a great part of his time, to attempting to specialise. General education is what makes a man understand that good things are worth paying for.

3163. I will put it to you in this way. I suppose we are all agreed that Germany has got a larger number of universities in proportion to the population than we have in this country?—Yes.

3164. In Germany one finds a great many subsidiary centres where education of a certain type can be given through the agency of certain schools?—Yes.

3165. Do not you think such an idea might be practicable in this country?—It might, but we have not got to the

Mr. J.
Bickersteth.
14 May, 1907.

Mr. J.
Bickersteth.
14 May, 1907.

point when our farmers' sons have got a good general education. What I want to see is a lad of 16 well educated. If you have a lad of 16 whose instruction has been not of a special character, but of a gymnastic character, and with regard to whom the subjects have been chosen because they appeal to his reasoning faculties, if you turn him out at 16, and he goes to hear lectures from a competent agriculturist, he will appreciate them better than he would with an inferior education in specialised subjects. If you multiply your specialised schools indefinitely, and have one centre for farmers, and one for commercial travellers, and one for bankers, you will not have such good results as if you have one school for intelligence and you turn them out intelligent members of society. The object of education is to make people defer to the expert.

3166. Then, I take it, in your opinion technical education—that is to say, education specialised according to the requirements of agriculture—is not necessary for the great bulk of young farmers?—It is not necessary for the bulk of any class under the age of 16.

3167. As a matter of fact, I suppose your three County Councils, powerful and wealthy as they are, cannot undertake to provide scholarships for the sons of every farmer in Yorkshire who desires education for his sons, and cannot undertake the responsibility and task of sending them to Leeds?—At present we are able to send to Leeds nearly all who wish to go; we have not reached that point yet.

3168. But still, after all, those who wish to go, as has been pointed out, are a very small proportion of the total population, and do not amount to 5 per cent.?—No, not of the population.

3169. In your district you indicate, in your evidence here, I think, that if larger funds were placed at your disposal you would suggest that these funds should be to a considerable extent utilised in developing local demonstrations?—Yes.

3170. In what other ways would you suggest that those funds might be used?—We want more money for the development of our farm work at Garforth. We have been talking for years about some sheep-feeding experiments, but we are unable to do that for want of funds, cannot put up the sheddings, and there are various matters that come up before the committee from month to month that are put off because of want of funds. The situation has changed so enormously since the counties were rich with the "whisky money." They are now poor with the "whisky money" plus an education rate which has to provide for the education of the people generally.

3171. Do you mean you are hampered to some extent by the fact that the "whisky money" is a decreasing amount?—It is a decreasing in actual amount, and also it is constantly being drawn upon for matters other than higher or technical education.

3172. Then your development, you think, would be in the direction of research and demonstration development rather than in purely educational directions?—I think so. But I am only expressing my own opinion.

3173. Have you in Yorkshire considered the question of providing instruction and education in forestry?—Professor Seton could speak more definitely about that. We have made a very small beginning at Garforth. We have set aside a bit of a field for some very elementary experiments.

3174. Possibly if you have not developed in that direction it was because you have not had funds at your disposal?—Quite so. That is one of the matters we should develop in, I think.

3175. (By Mr. Medd.) I think in your *précis* you say the agricultural education of an area comprised within such an institution as Leeds should be controlled as far as possible by some local body?—I think so.

3176. Does the agricultural department at Leeds issue a scheme to cover all the requirements of the agriculture of those three Ridings each year, after consultation with the three County Councils?—I think so. The Agricultural Council is representative of the three councils.

3177. It is representative, but I mean to say do you at your formal meeting at the commencement of each year take into consideration the requirements of each locality and formulate a definite scheme to cover the agricultural needs from the elementary schools up to your University?—I have indicated, I think, in my evidence that the Yorkshire Agricultural Council is deliberately of opinion that when a boy who wishes to improve himself leaves the ele-

mentary school and goes to the secondary school, he ought to go to a secondary school where agriculture is not taught.

3178. Exactly, but I do not know whether I made myself quite clear. You say that it is very desirable for one authority to control all agricultural education within this area. As a matter of fact, does this Agricultural Council take into consideration all the requirements of that area, and go carefully through them, and formulate a definite scheme each year?—We do not make a new scheme each year, though there is a yearly opportunity for revision.

3179. You do not take into consideration what may be needed in the extreme North Riding, or the extreme East Riding, but you merely, so to say, continue the same work you do year after year?—We are in constant touch, both by the members of the Council and our professors, with the farming interest, and any suggestions which any locality might make would be carefully considered.

3180. I notice that you do not make any provision for the intermediate agricultural education of those three Ridings, do you?—We do not think it would be a good thing to do it if we had the money.

3181. And you have never attempted, have you?—It has been attempted, and it is partly on the experience of receiving boys who have been where there has been an agricultural side that our professors have decided that it is better to let us have boys who have not been taught agriculture.

3182. That is having regard, is it not, to pupils who are coming to you?—Yes.

3183. And not having regard to those who never can get to you?—That is so.

3184. Now I think most of us are agreed that agricultural sides to secondary schools are, as you say, a failure, and are not desirable; but Professor Somerville was speaking rather I think of intermediate schools of agriculture. You have also in Leeds, have you not, technical schools and classes of various types for various industries?—Yes.

3185. At which pupils are received up to the age of 13, 14, 15, 16, and so on?—Not at the University.

3186. No, but in Leeds?—Yes, in Leeds.

3187. If you think that these technical classes and technical schools are of advantage to those going into the textile industries, and so forth, do not you think that corresponding classes and schools would be useful to boys going into agriculture?—Corresponding classes in schools?

3188. Corresponding classes and schools?—There are technical schools in our big towns. We in the East Riding have an arrangement with the City of Hull that our lads can go into their technical school. I do not think it would be desirable for us to encourage the Hull Technical School to have an agricultural class.

3189. No. The point is this: if you think it desirable for a boy going into a textile industry to have a textile school or technical class, why should not it be equally desirable for a boy going into agriculture to have an agricultural class or school?—I am not an authority on textile industries, and I do not know whether young boys who have passed through technical schools between the ages of 14 and 17 are very much the better. My idea of the great work that some of those technical schools in the big towns are doing (I speak without much knowledge of them) is the power that some of them have of attracting to evening classes older boys and women who have been engaged in the industry during the day, and come there at night; and so, I should think that our work is gradually encouraging the whole of the farmers to understand that after they have begun farming they must still look to the conclusions of scientific men to help them in their work.

3190. Exactly; you in Leeds are feeling now the great benefit that comes from the combination of work in the workshop and instruction in the class room, are not you?—I speak without any knowledge on that.

3191. It is very extensive in Bradford and elsewhere, and do not you think that with agricultural classes the farmer could equally benefit from a similar combination of practical work upon their own farms, with the technical instruction in winter classes?—I suppose in Bradford, within a radius of a mile, in the technical schools there are many thousands of pupils engaged in particular industries. But the farmers living in scattered districts, with only one house every two or three miles, cannot possibly have the same treatment as you would give to the closely congregated communities in towns. You cannot do it. No power in the world would

make it possible for the farm labourer to go to a technical school at night. He could not do it.

3192. Why should a form of instruction found useful and practicable elsewhere be so entirely impossible within your area. I refer, of course, to the intermediate practical school of agriculture?—I only know this, that I do not believe it would be possible to have evening classes in agriculture in our best farming districts, because of the extraordinary distances the lads would have to travel. I know that evening schools even in some country places are a great success, but I also know that though we have tried, and tried and tried in scattered districts, you cannot get the lads who are engaged in farming in districts situated such as parts of Yorkshire are situated to come to evening classes.

3193. I was not speaking of evening classes. I was speaking of winter schools. I understood you to say just now that you found considerable difficulty in receiving sufficient applications for your scholarships for the winter course?—Yes.

3194. Do not you think there would be a greater response if you took the instruction to the people instead of asking the people to come to you for the instruction?—I think the quality of the instruction would suffer.

3195. If it is practicable in remote and scattered districts in Ireland to conduct successfully winter classes for 26 weeks at Monaghan and Downpatrick, where the population is much less numerous than with you, why should it be impossible with you. You have never tried the system, have you?—No. I think we have spent our money wisely and we have none to spare.

3196. But at present you have this great gap, have you not, between what little work you do in the training of teachers and the provision of day school gardens and the people who come to you, and there is nothing otherwise done locally beyond occasional lectures for the small farmers and the better class labourer?—There is a great deal being done to make it possible for the small farmer's son and for the labourer, too, to attend secondary schools. We have spent a good deal of money in the establishment of secondary schools, and we would rather they went to secondary schools than to technical schools.

3197. I will not press the point further, but it comes to this, that you believe your whole educational policy in Yorkshire is to provide efficient technical instruction for people engaged in all industries other than agriculture, but you believe that would be impossible in the case of agriculture?—I think we have provided for agriculture. You do not take into account the extraordinary advantages that our labourers have in Yorkshire in watching the operations of farming conducted in the best possible way by the farmers themselves. Our farmers do make many things grow that do not grow in other places, and they make them grow well. They grow good crops, and they make many of the labourers, attached to these farms as apprentices, learn a great deal.

3198. Yes, everyone admits the excellence of your work, but all I desire to see is its extension and development in other directions so as to benefit a class at present neglected, and one which is the most difficult to deal with. Then in regard to your summer course, in what months is the course held?—May, June and July.

3199. Do the farmers experience any difficulty in coming to you in the summer?—We made the winter courses complete in themselves, and in order to make it possible for them to come easily we let some of them come in summer.

3200. I see you have stated that there is a summer course combined with it?—Yes.

3201. Then in regard to the continuation school work you used to have a system of giving theoretical instruction in horticulture during winter, followed by practical instruction in gardening during summer. Is that continued still?—Yes, at Garforth that goes on still.

3202. And is it successful?—We have model gardens at Garforth and we have a considerable staff of teachers there.

3203. What are the educational gardens in the East Riding and, I think it is, the North Riding?—They are evening school gardens, I suppose. That is where we guarantee the efficiency of the instruction. We have to prove the efficiency of the instruction and we send our professor, who goes and generally controls the syllabus of work done.

3204. Then in those educational gardens you give them a special course?—Yes.

3205. Are they cultivated by the men themselves, or are

they model gardens?—They are cultivated by the people themselves.

3206. Then, in regard to the day-school gardens, is instruction given there by your instructors?—In the elementary day school?

3207. Yes.—No.

3208. By the teachers themselves?—Yes, by the teachers themselves. There are not very many of those. They are only beginning.

3209. What is the attitude of the parents themselves towards that instruction, so far as you know?—In some of the country parishes it is surprising how they dislike it. It is a most deplorable thing. There is one case I remember, where we tried our best to get a garden class attached to an elementary school, and we had a unanimous refusal by the managers, or by all of them except the correspondents who had been in communication with me and the teacher. We wanted to do it, but the feeling in the village was so strong that we could not manage to persuade them.

3210. But in some places you have found these teachers who have been trained by you a real benefit to the agriculture of the district. That is mentioned in one place?—Did I say so in my proof?

3211. I think it says that in this Report?—I wanted to make it quite clear that we do not approve of agriculture being taught

3212. "A great benefit to the agriculture of the district," I said. This is how it is put in the Report: "It is no uncommon occurrence to meet a teacher who is making an excellent instructor in practical horticulture and whose whole initial training took place at Garforth"?—Yes, I think that must be Professor Seton who said that.

3213. It is in the Government Report. Do the scholarships cover the cost of maintenance?—Yes. I was asking Professor Seton about it the other day. We give them 15 shillings a week, and they spend, perhaps, a shilling or two more than that.

3214. In reply to Lord Belper, you said the whole of your work should be judged by the Department?—Yes.

3215. Do you think that might be facilitated if the whole country were divided into definite areas and inspectors appointed for each area?—That would be an administrative question for the Department to decide. I think it would be a pity to insist upon absolute uniformity. We are all of us experimenting in this work, and what might be suitable in one part of England, and possibly suitable in another part, might not be quite practicable just at once.

3216. No, I only meant to facilitate your work by bringing it into closer touch with the central authority?—We are in very fairly close touch with the central authority, and we have often visits from the inspectors. They come down and see us: that might be developed.

3217. (By Professor Middleton.) You have no less than four lecturers available to give lectures, namely, Professor Seton, and Messrs. Haydon, Archibald and Stewart?—Yes.

3218. I think it is the case that with regard to Messrs. Haydon, Archibald and Stewart, a great part of their work in the county is the giving of lectures?—Yes, peripatetic lectures.

3219. In Yorkshire more than any other county you are in the habit of giving systematic courses of lectures throughout the county?—Yes. I think the tendency has been rather to reduce that. There used to be 12, and there are now very often only six.

3220. I see, for example, you mention that there are 10 lectures on soil and on cultivation and on manures?—Yes.

3221. In other words, you have undertaken the work of giving courses of instruction and lectures in agriculture by thoroughly competent men throughout the county?—Yes.

3222. But in spite of that you find that the type of lecture which is being appreciated is the one dealing with experiment or demonstration?—Yes.

3223. That is to say you do not find your agricultural population take readily to lectures on principles?—Professor Seton would answer that question much better than I can. But that is quite a fair conclusion to draw from our experience.

Mr. J.
Bickersteth.
14 May, 1907.

Mr. J.
Bickersteth.
—
14 May, 1907.

3224. In your evidence you mention the fact that there was an instruction for lecturers to deal with the results of demonstration plots?—Yes, quite so.

3225. I suppose it is largely because of your experience in attempting to teach the principles of agriculture through out the county that you have come to the conclusion that what the farmer really wants is a good elementary education?—Elementary and secondary education. The rest is general intelligence. He will more readily appreciate what the scientific man has to tell him if he has a good general education.

3226. You have attempted for years, so far as I can understand your system, to teach the principles of agriculture by very well qualified instructors?—Yes.

3227. That has not been the most successful part of your work?—Except that that has borne a great share in what we think is almost accomplished, that is, the destruction of the prejudice that used to exist on the part of the farmer against all scientific work. They have been our missionaries, and they have done good work.

3228. But in looking at your county from the outside it rather seemed to me that your lecturers have become successful since they began to deal with the experiments made in Yorkshire and with the work done at Garforth; your lecturers have been successful for just as long as they have dealt in local questions. Did they always get large audiences in the early days?—In the early days I should think they got larger audiences than they are getting to-day, but the quality of the audiences, judged by the proportion of practical farmers attending, is better now. We used, if we had a popular lecturer in a country town, to have a crowded audience, but they were not all farmers.

3229. You have already stated that all the young farmers who wish to go to Leeds are able to get assistance to go there?—Yes; but we would like, of course, to look forward to the time when we could impose a severer test.

3230. You have extended your course from 10 weeks to 20 weeks?—Yes.

3231. Do you not think that that may have shut off a certain number of young fellows from getting to your classes who would otherwise have attended?—We did not think so when we made the change. I do not think it has been so. I think that the farmers were rather unwilling to send their sons at once for 10 weeks, and when we got them there we did not make the change from 10 weeks to 20 without carefully considering whether we should stop some of them from coming, and we thought not.

3232. What was the chief reason for the change, may I ask? Was it to improve the course from an educational point of view, or was it a staff difficulty?—Had you not a sufficient number of teachers to conduct a double course?—I am afraid I forget whether that was discussed much at the time when the change was made. I think it was, perhaps, that when we got the authorities at the University to make Agriculture a part of the requirements for a degree there was always a tendency to make the course coincide with the the university terms.

3233. (By Mr. Davies.) I think you told the Committee that the scholarships were awarded by committees?—Yes.

3234. They are not awarded by the County Councils then?—I suppose they are technically awarded by the County Councils, but the County Councils accept the nomination of the committee.

3235. That is the committee controlling the college?—The Yorkshire Council for Agricultural Education of itself is looked upon as a committee by the Leeds University, and it is, I think, looked upon as a committee of itself by each County Council. So that when the County Council awards a scholarship on the recommendation of the Yorkshire Council of Agricultural Education it has no sense that it is acting in any different way than when it awards a scholarship on the recommendation of its own Higher Education Committee.

3236. You told the Committee you have a test?—Yes, they do pass a little examination to see whether they are competent.

3237. Are those scholarships awarded for the short course or for the degree course as well?—There is a special scholarship for the degree course. I think the three councils give what they call a class A scholarship tenable at the University. In every Riding that can be competed for by anyone wanting to go in for the degree course in agriculture. But apart from that, if one of these subsidiary agricultural scholarships should be awarded to a lad for one year, and he were to persuade his father to let him stay for three years and allow him to go on for

a degree, I have no doubt the Council's scholarship would be renewed from year to year to enable him to do so.

3238. The scholarship which he got for one year would be renewed?—Yes.

3239. Then these courses do not go on from year to year?—No. They are for one year, and they require renewal even for the summer course. A boy would not be entitled to go for the summer course unless he was recommended by the professor as being a fit student.

3240. Does the scholarship cover board and so on?—Within a shilling or two, I think. The scholarship fees and maintenance allowance is as much as 15s. a week. It very nearly suffices to keep a boy at Leeds.

3241. Do many of the students attend the short course?—Some do. Professor Seton could tell you the numbers better than I can. I know there are some trained students. They are not from my Riding, but there might be some from the West Riding.

3242. Speaking broadly, you have not yet been able to induce farmers, although there are a great number of large farms in the county of Yorkshire, to see the desirability of their sons getting scientific instruction in agriculture, and you have not been able to impress upon them that it is worth while paying something for in order to get that instruction? You have really had to pay them to send their sons to college—does not it come to that?—We have up to the present, but I think there are a good many farmers now who would pay. I think the number will increase from year to year. People will value it so highly that they will be willing to pay. I do not despair of getting them to come, but it must be by a gradual process of development.

3243. But that has been your experience up to now?—Yes.

3244. Then are the scholarships held by some of the sons of the small farmers?—Yes. I am told that the North Riding students have mainly been the sons of small farmers.

3245. But you do not make any distinction, based on ability to pay, in regard to sons of people who are better able to pay?—No.

3246. Then as to the type of man who comes up for your short course, are they men who are able to appreciate the instruction that is given them?—That is a question which Professor Seton could answer much better than I can.

3247. Then I think you told Mr. Medd that it was rather difficult to arrange for a short course for students in the country winter courses?—I think it would be.

3248. How then are the lecturers in the college able to arrange for their lectures in different parts of the county? How about the peripatetic lectures?—I think the peripatetic lectures are given at fewer centres than would be necessary if there was a network of schools available for the lecturers. The peripatetic lectures are given very often in the country towns. A village six miles from the market town, with scattered farms round it, would be almost a necessary centre for the farm school, if you are going to take the lecturer to the actual worker. But fewer centres are enough for the farmers who can drive in. If you were to have something like evening schools for the labourers you would have to have ever so many more than you would need if you were only catering for the farming community, who most of them have a horse and cart.

3249. That has been attended in other parts of the country with some success?—Yes.

3250. Then I think you told the Committee you objected very much to any kind of technical side in the secondary schools?—Yes.

3251. Would you also object to the distinction between a modern side and a classical side?—No, I do not object to a modern side and a classical side, and I do not object to science being introduced into schools either; but what I would like to explain is that I think everything taught to a boy or girl under 16 ought to be framed gymnastically; that is, framed because of the educational benefit of the subject, not from the utilitarian point of view. It might be quite proper to let a boy whose genius lay in a scientific direction take science, but the science should be treated educationally and not professionally. You cannot with profit teach a trade to a child.

3252. It would help your students a good deal in a short

Mr. J.
Bickersteth.
14 May, 1907.

course if they had a sufficient course of science in a technical school, would it not?—It would help very much if the young farmers who come to our classes came with trained intelligence, and whether that intelligence was trained by what we generally mean by a grammar school education or a scientific education does not very much matter. Of course what we want is for them to come so that they can appreciate a lecture and take a note of what is said to them.

3253. Then one other point with regard to the lecturers themselves. If these courses go on for 20 weeks in the year, how do you employ the professors and lecturers for the remainder of the year, because most of the work seems to be done during the winter months? How do they employ their time during the summer?—They have to look after the demonstration courses. They have to do a great deal of work on the farm in the way of conducting experiments. But again Professor Seton could tell you how he employs each of his men in the year. It is not difficult even without allowing for any holidays. I know they are working all the year round. From the time the lecture season begins they have to be told off to meet batches of farmers. They have organised parties of farmers of 50 or 60 going to the farm, and one has to be told off to take them round.

3254. Are they fully occupied the whole of the year?—Yes, the whole of the year.

3255. Then, with regard to giving the grant, how do you propose to deal with the grant? Do you consider the present staff are underpaid?—No. One or two of them are, perhaps, but I think we pay ample salaries. We should like another man. We should like to be able to allow one man to give more time to local experiments. We should like to have the opportunity of sometimes taking a man off lectures altogether, and letting him devote his attention to some particular research work, and we should certainly like more money for our equipment at Garforth.

3256. Have you made any provision for agricultural libraries?—No.

3257. By what means are you distributing your literature so as to reach all types of farmers?—We generally address publications to the agricultural clubs. There are agricultural clubs in nearly every district, and we send publications to the secretaries and ask them to distribute them.

3258. Do you make a charge?—No, we do it for nothing.

3259. Then the agricultural department of the University distributes leaflets throughout the county?—Yes.

3260. Do you find the farmers appreciate those and make use of them?—That is again a question which Professor Seton could answer. He sees the farmers every day, and I do not.

3261. (*By the Chairman.*) I understand that your relations with the University are, that you say to the University, we want such and such work done?—Yes.

3262. You give the University your idea about the educational work which should be given?—Yes.

3263. The University does not say to you, here are the lectures we wish you to give?—No.

3264. But you propose to the University that certain lectures should be given, and then, provided you supply the money to the University, you always find the University is ready to enter into your views?—Yes. There has been no friction whatever between the University and the County Council.

3265. Do I understand that Class A scholarships are absolutely open?—They are absolutely open.

3266. To anyone?—Yes.

3267. Those are given at an examination, are they?—They are given at an examination.

3268. By the University authorities?—No, not by the University authorities, but by the board of examiners, which is of equal rank.

3269. How are the Class A scholarships organised?—The Class A scholarships would be organised by our education committee. Just now we are using for their Class A scholarships the matriculation examination, not of the University of Leeds, but of the joint board of the Northern Universities. I mean, the examination is of the highest possible character.

3270. That is the test which is applied for these Class A scholarships, is it?—Yes, for these Class A scholarships.

3271. Then, in addition, you have what you call subsidiary scholarships?—Yes.

3272. And they are given by what might be called minor tests?—Yes. No severe educational test. They are given to farmers' sons who are likely to profit by the course.

3273. They are given by selection?—Yes, by selection.

3274. At the end of the first course for the subsidiary scholarship, if it is shown they are not fit to go on, then they are got off?—Yes.

3275. If they are through the first year, if they show sufficient aptitude, the scholarship is renewed in some way?—Yes.

3276. On the recommendation of the professor, I suppose?—On the recommendation of the professor.

3277. Then, are these scholarships sufficient? Is it not necessary for them to supplement them by additional expenditure?—No; you may practically take it that the maintenance allowance covers the expenses.

3278. That is there is sufficient for Class A and for that subsidiary class?—For the Class A it is £60 a year, and I suppose it would have to be a very economical student who could live entirely on that.

3279. Then is the subsidiary scholarship of a greater amount?—It is for a shorter time. I think the fees in the University are about £10 for the 20 weeks. There is £15 allowed for maintenance. The Class A scholarship would be certainly equal and perhaps rather greater in amount, but probably it would be swallowed up by the fees, which would be rather higher. Instead of paying fees for only one department, they have to pay for special things.

3280. But in both cases you think the amount is practically sufficient to keep them?—Yes, it is practically sufficient to keep them.

3281. Then are there many students who pay?—There are students who are paying. I do not say many.

3282. But there are farmers who are prepared to pay the whole cost?—Yes, and farmers outside Yorkshire also.

3283. There are other students in the University department who pay the fee, are there?—Yes.

3284. Might I ask you with regard to the large class of farmers whose sons cannot attend the University and whose sons cannot get a scholarship, and who have not got the time, and who therefore leave off at 16, say; you would not object to a higher elementary school being organised in such a way as that there should be attention paid to the application of science in an elementary form to agriculture, without taking away the character of the general education?—Even there, if I were framing such a course, I would avoid the use of the word agriculture. I mean I think we should do harm if we were to recognise for a moment that either in the elementary school or in the higher elementary school the science of agriculture should be taught.

3285. I am not mentioning the science of agriculture because I see your point of view. I am mentioning merely, this, that in the illustration of such sciences as are taught in the higher elementary school, attention should be paid to the needs of the agriculturist?—Yes. Wherever your elementary school or your higher elementary school or your secondary school exists, it is desirable that the teacher should draw his illustrations from objects familiar to the children whom he has to teach.

3286. You agree in that?—Yes, that is the intention of education, and that is why I am anxious to make people clearly understand that I deprecate the introduction of agriculture into an elementary school. We are none of us opposed to the intelligent application of any object lesson that is given by the teacher, and the illustration of that lesson by the objects which are familiar and ought to be familiar to all the children in the school, and we do all we can to encourage it.

3287. (*By Mr. Medd.*) Would you be prepared to admit scholars from other counties to Leeds for scholarships tenable at Leeds?—We should be very glad to see them.

3288. (*By Lord Belper.*) Do your Council levy a rate for secondary education?—Yes.

3289. What is the rate?—A penny in the East Riding.

3290. The grant for elementary education in some country districts means a very large extra rate upon the agricultural classes?—Yes.

3291. Has that made it more?—Yes, it has made it very much more, and we should also remember that out of the higher education rate there is a very great deal of expenditure that ought to be for elementary education, but which is called higher education.

Mr. J.
Bickersteth.
14 May, 1907.

3292. You refer to the training of teachers, do you?—Yes. In my small county of the East Riding of Yorkshire when we got £5,000 a year for technical instruction it was different. We were able to do the thing liberally, but now the £5,000 a year is applied for purposes which really belong to elementary education.

3293. As a matter of fact, with the same funds you can do much less in the way of secondary education now than you could a few years before, because of the extra charges that have been put on higher education?—Yes, quite so—that is no doubt the case.

3294. Is it the view in your county that these facts have interfered with a complete scheme of secondary education being initiated?—Yes. If we were to sit down and count the cost of it for the last ten years we should be so frightened that we should not do anything at all.

3295. I suppose agricultural education, amongst others, suffers in the same way?—It does.

3296. That is one of the reasons why there is a stronger pressure now for further funds for agricultural education?—Yes.

3297. (*By the Chairman.*) When you end the 20 weeks' course, do they pay your fees?—They pay fees if they do not come with our bursaries. Professor Seton could say whether there are any of these students who remain with us a year who pay. As a rule the 20 weeks' course is made up of students who have got exhibitions from us.

3298. Are these exhibitions given by examination?—No.

3299. They are given, how?—They are given by nomination.

3300. By selection?—By selection.

Mr. ALFRED INSKIP, called and examined.

Mr. A.
Inskip.

3301. (*By the Chairman.*) You are Chairman of the Bedfordshire Agricultural Education Committee?—Yes.

3302. What is the constitution of the committee?—It consists of one representative from the Bedfordshire Chamber of Agriculture, one representative of the Bedfordshire Agricultural Society, a certain number of members elected by the Education Committee of the Bedfordshire County Council, and also representatives of the subscribing counties. It is not considered to be a committee of the County Council, but it makes an application annually for a grant towards its expenses.

3303. Which are the subscribing counties?—Cambridgeshire and Hertfordshire. Do you wish to hear the history of the whole institution?

3304. Can you give us the amount of the funds which each of the contributing counties gives?—I think Cambridgeshire gives £50 and Hertfordshire £25.

3305. And Bedfordshire?—The Bedfordshire County Council's contributions have varied. This year they have reduced it to £500.

3306. Then can you give details about the Ridgmont Farm School?—The Duke of Bedford adapted the buildings of the Ridgmont Farm to meet the needs of the institution and gave them to the locality, charging £1 a year for them—a peppercorn rent—for the education of 20 agricultural labourers' sons. They would not come in the first instance for agricultural education as we understand it, but to be made skilled and intelligent labourers on the farm. It was carried on on those lines till the year 1901, and was managed by what was known as the Farm School Committee, which was a sub-committee of the Technical Instruction Committee. Capital to the amount of £3,000 was advanced by the Technical Instruction Committee, and the annual average grant from that committee towards the Farm School was about £700. The Technical Instruction Committee also annually spent about another £700 on other forms of agricultural education, making the total amount of the county fund for agricultural education £1,400 per annum. The school failed to attract the lads. We found out the reason was this: That just at the time when the lads would be leaving school and beginning to earn a little money for the parents was the time when the farm school required them, and the labourers did not care to make the sacrifice of sending their children to this school, as they had to lose the wages they might earn; so that the school failed to attract the lads we required; and we found also that 50 per cent. of those who did go there left working on the farms and went to brickfields and railways and other forms of manual labour. The Duke instituted the farm with the idea of benefiting the agricultural labourers' sons and agriculture generally, but it failed. Then in January, 1901, the Bedfordshire Agricultural Society and the Bedfordshire Chamber of Agriculture were invited to appoint three members each, to confer and report to the Technical Instruction Committee as to a definite and comprehensive scheme, embracing the whole of the agricultural instruction for the county of Bedford. Their suggestions were that Ridgmont should remain a central institution and that there should be short courses held there, and that the minor arts of agriculture should be taught, that local lectures should be given with regard to farriery and dairy work, and that the advantages of Ridgmont under certain conditions should be open to other counties. This report was submitted to the Technical Instruction Committee, and by them referred to the

Farm School Committee to make their observations thereon, and they drafted a scheme on those lines, suggesting that what was then known as the Farm School Committee should be re-named the County Agricultural Education Committee, which should consist of representatives appointed by the County Council, one representative of the Bedfordshire Chamber of Agriculture, and one representative of the Bedfordshire Agricultural Society. This arrangement was approved of by the Technical Instruction Committee in November, 1901, and all agricultural education in the county of Bedford was delegated to this committee. The committee at once set to work, and appointed Mr. Walker in May, 1902, as the principal, and the short courses for the first year were pretty well attended. No fees were charged, and some of the students took both courses. Then the new Education Act was passed in 1902, which again threw the whole thing into the melting pot. The old Technical Instruction Committee was entirely done away with, and we came under the control of the Education Committee. In the spring of 1903 the Agricultural Education Committee were re-elected, and we thought that the time had come when we might reasonably charge fees, and so we made a charge of £2 for each of the five weeks' courses. We held three courses during the winter of five weeks each for men, and two courses for women of five weeks each, and we fixed upon the fee of £2 for each of the five weeks' courses for resident students, and £1 for non-resident students, and we have found although there have been fees, there has been a gradually increasing demand, and this last winter we have had 15 students who have paid the fees—some of them from other counties outside where the fee is £10 for the course. I think that is the history of the institution up to the present time.

3307. The resident students pay higher fees than the non-resident students, do they?—Yes.

3308. Are they limited to the sons of farmers or labourers of the three contributing counties?—Those who pay £2 must reside in the county of Bedford, and anyone can come from anywhere who will pay £10. It is open to anyone who pays £10 because the county is no loser thereby.

3309. Those who belong to the contributing counties pay a small fee and those who are non-resident must pay for the whole course of education they receive?—We give the contributing counties certain rights. There are so many places, according to their contributions, in these courses.

3310. Then the old idea that it was intended for labourers' sons has been abandoned?—That has been entirely abandoned. We do not teach labourers' sons now. Our main students are farmers' sons or those young men who wish to take up farming as a profession.

3311. Therefore the experiment to make the institution useful for labourers' sons has failed?—It has failed entirely. That is admitted on all hands in the county—even by those who tried it.

3312. Then do you send out lecturers in the county?—Not so much as we did a year or two ago. I think as to what the lecturers had to convey, there is not a demand for it at present. When you have delivered a certain course of lectures on certain subjects, there the matter ends and you do not want to hear the same thing over again. I think the lecturer a few years ago did his work, but he is not so necessary now as he was then.

3306a

3306b

Mr. A.
Inskip.
14 May, 1907.

3313. Do you consider that he is less necessary now to the agricultural development of the county?—Yes. That is, we used to give lectures on bee-keeping and we used to give lectures on dairying and lectures on various things of that sort, but now we think it better to give them the practical information on these things at Ridgmont or at any local course rather than by a lecture. Instead of lecturing on bee-keeping now we have the bees and we have the lecturer there to explain the whole thing.

3314. And you have what you call local classes?—Yes.

3315. But are those local classes taught by the staff of the Ridgmont Institute?—Yes.

3316. What do these classes involve—how long is the course in the local class?—It depends on what subject is taken in hand. We have local classes now in shoeing, and we would take four or five centres in the county and would have four or five nights, one night each week. We have a trained blacksmith to teach shoeing and also a veterinary surgeon to lecture on the anatomy of the horse's foot, and give the students instruction in that way.

3317. Are those lectures well attended?—Yes.

3318. By farmers' sons?—No, they would not be attended by farmers' sons. The farriery classes would be composed of young men blacksmiths—young shoeing smiths in the county.

3319. Are all veterinary lectures attended by farmers' sons?—The veterinary instruction is given at Ridgmont in connection with the short course, and that is how the farmers' sons avail themselves of it.

3320. Are those classes limited to farriers?—To anyone who wishes to learn shoeing.

3321. Is that the only local class?—We have classes in sheep shearing as well.

3322. Are there any local classes for dairying?—There have not been any for a year or two. We have not given them lately because we have the Central Institute at Ridgmont which carries on two classes for five weeks each during the summer time, to which people can come.

3323. But do you wish further development to come to these local classes?—Yes, I think we might extend in that direction.

3324. Are those local classes given in the contributing counties—in Cambridgeshire and Hertfordshire besides in Bedfordshire, or only in Bedfordshire?—Only in Bedfordshire.

3325. You think that the Government grant should be increased?—We can see various ways whereby we might improve matters, but we are stinted as regards means. I remember a short time since that the county of Bedford used to vote under the old Technical Instruction Committee £700 to the Farm School, and £700 was spent on other forms of agricultural education, that is in local lectures and such like, but now the total money found by the county of Bedford this year is only £500. That is the amount that has been voted, and on that we have run the institute, and find all other forms of agricultural education for the county. That is the great difficulty we have to contend with, and unless our committee had been very careful with regard to organising its work and trying to make the work pay we should have been obliged to curtail our work considerably; and it appears to me if a scheme can be arranged whereby an increased grant from the Board of Agriculture could be given in such a way that the County Councils could not take advantage of that and reduce their grant, we might be helped. Some *pro rata* arrangement might be made.

3326. Of course you wish the grant of the Board of Agriculture to be supplementary to the grant of the counties?—Yes.

3327. But not a separate thing?—I look at it in this way. They have knocked our grant down this year. We had £700 and it was proposed that it should be £600, but they got it down to £500 and we have a grant of £100 from the Board of Agriculture. Now I do not think it fair that the County Council should take advantage of the help the Board of Agriculture chooses to give, but that is what the county of Bedford is doing.

3328. (*By Lord Belper.*) With regard to what you have said, you say you have got only £600 towards the Institute from the Bedford County Council?—£500 this year.

3329. I should like to ask you a question on that. Here is a report in my hand which is the annual report of the distribution of the grant to agricultural education, and it is stated that the county of Bedford grants £1,166

to the colleges and the schools, and in a note to that it states that the institution which they grant to is the Ridgmont Institute, to which they give £801. Is that a different year from the year you are quoting?—Yes. I am giving you our last one, for May—this month. The County Council meeting was held on the first week in May. We made an application, and I have before me the written application which I will hand into the Chairman. We made an application for £600. We thought we could run on that because we knew ever since the Act of 1902 a higher education rate had been levied, and the county looked very much askance at Ridgmont as being partly responsible for that three farthings rate, and so we try to run it as closely as we can. We asked for £600 but it has been knocked down to £500.

3330. You asked for £600 for the coming year?—Yes, for 1908.

3331. Then it has been reduced in two years from £801 to £500. For the year 1905-1906 you got a grant of £801 according to this book, and that year that you have spoken of is 1907-1908?—That is £500.

3332. That has been reduced since 1905-1906 from £801 to £500?—I do not know how these figures in this book before me are got at, but this is probably the amount actually spent in that year.

3333. But it states here the grant to the colleges and schools is £1,166, and in a note it says that Ridgmont Institute got £801?—That would probably be the total amount spent, because last year we got a grant from the County Council of £600. The year before that we had not one penny. We were working on our accumulated funds the year before.

3334. Then do you suggest this is wrong?—I should say these are not the actual amounts. This amount is not the actual amount that was voted by the County Council, I should say, but the actual amount of the money spent in one year or another has come out of the County Council, but not for that particular year.

3335. The heading is "Grant to the Colleges and Schools"?—Yes.

3336. (*By the Chairman.*) However, I think you might send in a statement, and you had better look into this and then you can write to the committee when you have looked into it as to whether these figures are not accurate, and whether they ought to be amended?—But I should like to clearly understand what it is you wish to settle, because I think I can give the actual amount the County Council have voted for my committee during the last three years. I think the explanation is that this is the amount spent for that particular year.

3337. It says the grant?—It has been granted, only not granted in that particular year. If you go back I think we can explain it. This year we have got £500 granted; the year before £600; and the year before, nothing. The year before, I think it was a considerable sum—something like £1,200, but I am not certain of the amount.

3338. Will you then hand in a statement on this subject?—Yes.

3339. And you will see that the statement is accurate?—The actual amount expended?

3340. As to the grant received and as to the actual amount spent?—I can give you the actual amount.

3340A. But you had better give us that afterwards when you can look into it at your leisure.—[*The Witness subsequently forwarded to the Secretary a statement showing year by year the County Council grants to the Agricultural Education Committee. The total of these grants was slightly greater than the total of the amounts expended as shewn in the Annual Reports of the Board.*]

3341. Now I want to ask you a question about field experiments. Are any field experiments carried out?—Yes, we have carried them on for three years, I believe. They are of great interest to the agricultural community. We have had experiments on potatoes, and different manurial experiments with regard to potatoes, and the varieties of potatoes, and varieties of beans and oats and wheats, and we have the report printed at the end of the year, and any farmer can have one who applies for it. I have copies of two of them here. These were printed, and there has been a great demand for them. I think the whole lot were distributed.

3342. Then experiments are appreciated by the farmers, are they?—Yes, I think that is one thing that is more appreciated than any other part of our work.

Mr. A.
Inskip.
14 May, 1907.

3343. After the experiments have been made lectures are given on the subject, are they?—No, I do not think so. Lectures have not been delivered on those subjects at present. Those reports and summaries of them have been circulated in the county, and I believe Mr. Druce has given an address on those matters at the Chamber of Agriculture meetings in Bradford.

3344. Do the farmers apply for explanations with regard to these experiments?—I think Mr. Druce will answer that question better than I can. I have no means of answering it.

3345. Then the attitude of the farmers towards the Ridgmont Institute is now favourable, is it?—It is getting more favourable. They do not view with any favour the institution as such, but with regard to the work it does in conducting experiments and in giving these classes in farriery and in sheep shearing and in agricultural arts, they appreciate it. We are trying to give teaching in ploughing. We have an annual ploughing match, and that is very popular. Anything in that direction they appreciate, but up to the present I am afraid they do not appreciate so much as we would wish the institute as such. Yet, on the other hand, we are bound to admit that some one appreciates it. The smaller class of farmers, it appears to me, do, because although we charge a fee now, whereas before we charged none, our pupils are increasing. So that it shows we do supply a want and that it is appreciated.

3346. Do you say that the smaller farmer appreciates it more than the larger farmer?—Judging from all the facts of the case, I am driven to that conclusion. As I go about amongst the biggest farmers they speak of it disparagingly, but the fact remains that we get pupils. The bulk of them come from the small farmers, and from people desirous of commencing farming, but some come from the big farmers.

3347. Do they send anything like manure to be analysed in your farm?—No, we have no means of doing that; we have no laboratory.

3348. You do not do anything in that way?—No.

3349. (*By Lord Barnard.*) I find a rather useful paper inside this report which you have handed in on the administration, which appears to show that the committee of management is a little larger than what you have informed us. In addition to 10 representatives of the education committees, one of the Bedfordshire Agricultural Society and one of the Bedfordshire Chamber of Agriculture, there are two appointed by Buckinghamshire?—I said members of the contributing counties, I think.

3350. Yes, but you did not tell us of Buckinghamshire. You never mentioned Buckinghamshire?—Because Buckinghamshire does not contribute now. What year is that?

3351. I do not know.—They have joined Reading.

3352. It is 1904 and they have gone off, have they?—Yes.

3353. Cambridgeshire and Hertfordshire stay on?—Yes.

3354. Then Cambridge University you did not mention?—I overlooked that.

3355. They still have representatives?—Yes.

3356. Then this committee, apparently, do two things. They run this Ridgmont Institute, and in addition to that they do a considerable amount of other agricultural work as well in the county?—They do the whole of the agricultural work in the county that would be done by some one if there were no Institute at Ridgmont.

3357. You said just now the County Council give a certain sum towards the Institute and a certain sum towards the other work?—No, excuse me, the Technical Instruction Committee did, not the County Council.

3358. But do not go back into the past. At the present day the County Council give £500 for the current year and nothing for outside lectures at all?—No.

3359. Or any other work?—That is the total amount voted for agricultural instruction for our committee to spend at Ridgmont or elsewhere as they think best.

3360. Who acts as clerk or secretary to your committee?—Mr. Spooner, the Director of Education for the County Council.

3361. A County Council official does?—Yes, the Director of Education.

3362. Do you keep accounts?—Yes.

3363. Are they audited?—Yes.

3364. And presented to the county authorities?—They are presented to the Education Committee. The farm balance-sheet is presented and also the account of the Institute.

3365. You cannot put a copy of these accounts in, can you? Have you one?—I believe I have for this last year. Here is our report for the year. (*The same was handed in.*) Our figures for the year and our estimate for the coming year are together.

3366. That would be interesting to have. Now, about these County Council grants, how and when are they paid? Do you apply for them or do they come as a matter of course?—We apply. In the first instance a letter is sent to the Education Committee. I have got a copy of the letter.

3367. It occurred to me that a possible explanation of this sum of £801 and so on, might be that you received more than one year's grant into one year's account?—Yes, we must have done that.

3368. I thought that might possibly be so?—Yes, because for one year we had no grant whatever—not a penny was paid during one year.

3369. You told us, I think, the Duke of Bedford very generously allows you the use of the farm rent free practically?—We only pay £1 a year.

3370. There has been a good deal of money applied?—Yes.

3371. The farm consists of 270 acres?—Yes.

3372. Then practically we may say his Grace contributes a sum of £300 or £400 a year?—I do not know what it was let at before, but our farm profit was £175.

3373. Do you charge yourselves rent?—No, the committee that was formed when the farm school was given up as a farm school (the committee consisted of representatives of the Bedfordshire Chamber of Agriculture, and the Agricultural Society), they said they never expected a farm that was used for educational purposes to be run at a profit, and if it paid its own way it was enough. They go on assuming, on page 6 of the report, that it would simply meet its own expenses, but we have done more than that. Since we have made experiments we have made it pay and bring in a profit of £175 to £200 a year.

3374. You have done better than most people?—But we have had our grant reduced accordingly. If we had not made that profit we should have had either to reduce our work or get a larger grant from the County Council.

3375. You have had in addition to that £300 or £400 from the Duke of Bedford?—I do not know the amount derived from farms; I do not think from my personal experience that that land is worth even £1 an acre.

3376. Then there is the amount spent on buildings, and so on?—Yes, there is the interest on the buildings.

3377. Land is not derelict in Bedfordshire yet?—No, not much of it.

3378. Are there any other industries in Bedfordshire besides farming—important industries I mean?—Yes, Luton is a great centre of the straw-plaiting industry, and Bedford is getting gradually a manufacturing town; we are getting motor works and other works, and there is the firm of Allen & Sons.

3379. It has also a large residential population?—Yes, but it is getting a large manufacturing town as well.

3380. But there are urban residential districts besides the rural districts; but, however, do not trouble about that point. Then to come to the real point. Is it very largely an agricultural county?—Yes, that is the main industry in the county, undoubtedly. Everyone will admit that.

3381. Is it arable farming or grass farming, or mixed?—The northern part of the county is given up to ordinary farming, the eastern part to market gardening. There is fully one-third of the county which is largely market gardens, and we get a good many of our students from that district. But Mr. Druce will be able to inform you on that.

3382. An institution of the character of Ridgmont Institute would be very useful to that class of people?—That is where the practical experiments were interesting. There was a keen interest taken in the manurial experiments, and owing to the market gardening industry Bedfordshire possesses a larger number of small holders than any other county of its size. The land is largely cut up in the eastern part.

3383. What do you call the ordinary extent of a holding. Is a small holding 40 acres?—There are holdings in my neighbourhood of any size from 1 to 400 acres, but you

cannot get them always when you want them. Land is easily let.

3384. How many students can you put up in the college?—20.

3385. That is the general number actually in residence at one time?—We have had 15 this winter.

3386. Are you ever full?—No, we have never been full under the new scheme. We were full of boys. But if we were full we should find it difficult to manage. We have sleeping accommodation for 20, but the other accommodation would be cramped in regard to the dairy, and if we had a full lot of pupils we should not be able to carry on the instruction as well.

3387. You have three courses in the winter and two in the summer, and they do not take up all the year. What happens during the other part of the year?—There is nothing going on in college during the other time—not as a college.

3388. Do the students do anything in the way of farm work?—Yes, practical work.

3389. How do you get that work done when they are not there?—The labourers do it.

3390. You have labourers there, then?—Yes. The students cannot carry it all on.

3391. Is your committee sufficient to impart any information of real value?—We were obliged to go on a tentative scheme to start with. When we began it we had no experience to go by. After we started these short courses, after consultation with the farmers and others, I think we have been fairly successful considering that the farm school was very much disliked by the farmers. We started without any fees at all, and we got a few students. We found they gradually came in to it, and then we began to charge £2 for each of these five courses. The time may come when we shall see that it will be advisable for us to extend that, and I think that is what we ought to do myself.

3392. To extend the course?—Yes.

3393. To 10 weeks perhaps?—Yes, but we have got to meet this difficulty, that if we extend the course it means extra expense on the institute account, and if the County Council is in its present frame of mind we shall have a difficulty in getting the money. We could extend for the benefit of the institution and for the benefit of agriculture generally if some arrangement could be made whereby the Board of Agriculture and the County Councils could work together to help us, and one would not take advantage of what the other does.

3394. You would be, perhaps, favourable to the opinion which, I think, was expressed before that the policy of the Board of Agriculture might be to help those who help themselves, and proportion the Government grant to the County Council grant?—Yes, something of that sort ought to be done in my opinion, because I cannot help thinking that if I could have presented the case a fortnight ago, when the Council met, saying that if they reduced our grant to £500 the whole thing must absolutely collapse, they would not have done it but have given us the £600. That shows that the County Council have taken advantage of the grant from the Board of Agriculture.

3395. For how many years have you had a grant from the Board?—I think it is the second year.

3396. Most of your students go in for agriculture in some form or other, or some like industry, do they not?—75 per cent. of the students who have been in our institution under the new régime have gone on to the land in England.

3397. What is the average age?—I do not know the average age.

3398. Do any of your students go on to the Universities or pursue their agricultural studies?—No, that is what I want them to do, but we have not got the means. We have got some smart lads—one or two that come up who would be glad to go on to Cambridge, but they cannot do so. If I were to suggest spending money in that way I do not know what would be the consequence.

3399. The facilities for enabling the really clever boy to pursue his education to his own advantage and that of the county generally, do not exist in your county?—No, I am sorry to say they do not. Till there is some system of interlocking the grants I am afraid there never will be, or until there is some mode of working the County Council grant and the Board of Agriculture grant together.

3400. (By Mr. Acland.) What would happen if you were to decrease your institution? What part of your work will you have to curtail?—I am of opinion that rather than let us do less than we do now the County Council will

just keep us alive, but they will not allow us any power to expand. But if I did go to them and tell them that my committee would have seriously to consider retrenchment, I think they would come to the rescue. That is only an opinion, but, so far as I can gauge, the feeling in the county generally is that. If we were driven to the worst I should not know where to draw in.

3401. Do you think that the objects connected with secondary education on which the County Council are presumably spending their money are very necessary objects for the county?—Yes, but I am bound to admit that in regard to the money that used to be spent under the old Technical Instruction Committee, the “whisky money” that is, before the Act of 1902 was passed, which, under the Higher Education Scheme depends on the rates in part, we used to get £1,400 for agricultural purposes from the county of Bedford, but now that money is gradually being absorbed by other branches of education, because they are more clamorous for it. They know that technical education is good for them, and they want it, and the farmers are quite willing for the money to go that way. It seems to me absurd to neglect their interests.

3402. Do you notice a lack of general education in the students who come to you, or do they come well prepared to take advantage of the instruction given?—I could not say. Mr. Druce will answer that, I think.

3403. (By Mr. Staveley-Hill.) I understood, in answer to Lord Belper, you said that you issued at the end of the year the balance sheet given in your account?—Yes.

3404. Owing to that you looked upon it as a somewhat unfortunate event, because you lost some grants by it which you would otherwise have had?—It appears to me that, as a committee, if we were to act carelessly and mismanage the farm and make a loss, instead of lessening it the County Council might make us a bigger grant.

3405. You have got a farm of 270 acres, which is worth £1 an acre safely?—That is probably so.

3406. Then if you charged your rent you would have a deficit?—Yes.

3407. And you would have been able possibly to realise that aspiration as to the grant?—No. I think those who are on the County Council are artful enough to know something of what we actually have.

3408. If you did write that off, it would show a deficit?—Yes, but we are obliged to show our actual balance, and they would say “But you have got it—there it is, and while you have got it we will not vote you any more.”

3409. In your Institute to-day you have women pupils as well as men?—Yes.

3410. Do they come to learn poultry management and dairying?—Poultry management, the bottling of fruit, and dairying.

3411. At what time of the year?—April and May, and in regard to that we have a great demand for those courses. We get full up every time.

3412. Now with regard to your instruction, you appear to give instruction in farriery?—Yes.

3413. And in veterinary hygiene?—Yes.

3414. Throughout the county?—At Ridgmont.

3415. At various centres, or only at the college?—The farriery classes are throughout the county in different centres.

3416. And the other, where?—At the Ridgmont Institute alone. In regard to the young men's school you will find a syllabus.

3417. Do you find that these farriery classes and lectures given by the itinerant lecturers are well attended?—Yes, as a whole, and we have a competition at Bedford in connection with the Agricultural Society for the students who have been through our classes, and we offer prizes.

3418. Do you find that many farmers of the county or the contributing counties of Cambridgeshire and Hertfordshire apply to you as the result of the experiments, or to obtain some knowledge of farm work and experimental work?—Mr. Druce could answer that question, because he has the whole lot of these reports, and they are distributed where the demand comes from. I believe there is a demand for them.

3419. Then I see from the report here you have something in the nature of instruction in hedging and thatching, and so on. That is for those persons who only attend during the day, is it, who are not resident pupils?—Yes. We have been trying to get up some form of instruction in

Mr. A.
Inskip.

14 May, 1907

Mr. A.
Inskip.
14 May, 1907.

that kind of work for some time past, but we have found considerable difficulty.

3420. What is the difficulty?—Unless education is actually imparted, no money can be granted out of the education fund from the County Council, and our difficulty has been how to impart this particular class of education. I think we have solved it with regard to ploughing. We invited applications last year from those who wished to enter the ploughing match, and then we have sent an instructor round to that farm previously to teach them to plough, and we go to the extent under this system of imparting instruction with regard to all that is interesting to farmers and their practical needs. We find that is where his interest lies, and if we could teach thatching it would be more interesting. He is more interested in the education of his man than of his son at the present time.

3421. (*By Lord Moreton.*) As to farriery teaching, I understand that you have a competition?—Yes.

3422. At your County Shows?—Yes.

3423. Do all the people have to go in for that, or is it only voluntary?—They are optional. There are five prizes offered for these who have attended the classes during the season.

3424. Then have you any form of examination at the end of the class? Is your class subject to an examination, or is there anything to show the quality of the work?—Yes, we have that.

3425. Is that annually held under the auspices of the Worshipful Company of Farriers?—Yes.

3426. Therefore such examination as there is is held by an outside body?—Yes, any one of our pupils can present himself for examination for their certificate.

3427. And therefore am I right in thinking that such examination is held by an outside body?—Yes.

3428. (*By Mr. Latham.*) I cannot help referring to your speech made at the Farmers' Club, because from that I came very strongly to the conclusion that Bedfordshire was very much against scientific education?—I will tell you what I think is the cause of it. The farmers never took to the farm school, and the Institute at Ridgmont got a bad name through that. I think that is partly responsible for their antipathy to Ridgmont.

3429. If you gave it a fresh name would that remove the opposition and overcome their neglect?—I think it would make a difference. That is purely the cause of it—anything in connection with Ridgmont is bad, they say. That is the idea that is abroad.

3430. Supposing you gave it a fresh name, what name would you give it?—We shall break the prejudice down in time.

3431. But what would you call it? Would you call it a college, because some people seem to think that farmers trained at colleges are no good?—Yes.

3432. They think that the practical man is a long way the best in agriculture?—That is the general idea.

3433. Do you think it would involve a great deal of trouble, even with the assistance of Mr. Druce, to break that prejudice down?—I think we are gradually breaking it down—I am satisfied we are doing it. We are slowly overcoming the prejudice. They begin to see, by our experimental work and in other ways, that there is really some good being done, and the fact that we get pupils also shows the prejudice is breaking down.

3434. You said last year that the committee are convinced that the Agricultural Institute are giving good instruction over a large portion of the county?—Yes.

3435. Yet you still stick to it that it was very far from being a success?—No, I have never admitted that our college is not a success. I say it is not popular, but it is doing good work, and in time I think by our good work we shall make it popular.

3436. To return to this balance sheet of yours which I, as an agriculturist, cannot understand. First of all you show receipts and expenditure?—Which balance sheet is that?

3437. The balance sheet for 1906 of the Ridgmont Institute. You say there is so much of receipt and so much of expenditure, and you treat it as though it had been your own?—Are you referring to the farm account?

3438. Yes. Is that the right way to deal with property that does not belong to the college?—But everything belongs to us. The County Council made a capital grant of £3,000.

3439. I perfectly understand that, but who pays the

County Council tax on the college?—I do not know—probably the Duke.

3440. It must be paid, and if you do not pay rent you should show the rent on one side and the gift from the Duke on the other side, because otherwise it is not a proper balance sheet?—We do not know what the rent was or what rent to charge.

3441. It is very difficult to make a balance sheet in agriculture on these lines, so far as I know?—We put the rent down as what it is. It is £1, you will find there. The actual rent is £1, and you will find it put down as £1.

3442. Where?—On one side or the other of the balance sheet.

3443. I cannot see it. But taking Bedfordshire as a County, as we must take it for the purpose for which we are here, is £1 an acre a fair price for land in Bedfordshire?—Some land is worth five shillings an acre and some land is worth £6 an acre.

3444. You know as well as I do there is a very great industry in Bedfordshire in growing onions, and the land so used is not let at £1 an acre?—I am in that industry myself, and I should like to get it at £1 an acre.

3445. Land in Bedfordshire would not be fairly reckoned at £1 an acre in the North?—I do not know about the North. In the East it is considerably more.

3446. You are Chairman of the Agricultural Committee?—Yes.

3447. What did they do with you first of all when the "whisky money" first came out?—When was that, may I ask?

3448. That was some time ago. What was the last money you ever had from the County Council Committee before then?—We used to average £700 a year for the Institute and about £700 a year extra used to be granted. Our maximum would be about £1,400.

3449. If I have not made a mistake, at that time Bedfordshire stood as high as most counties in giving assistance to agriculture?—I am not able to make a comparison. I do not know. I was not chairman at the time.

3450. From the County Council, that is?—I should think they did at that time.

3451. Then the loss to the county is very serious in consequence of secondary education taking the place of agriculture, is it not?—Yes, that is my opinion. They have gradually appropriated more money to other secondary education in the county.

3452. What is the secondary rate in Bedfordshire?—Three farthings.

3453. And the Board of Agriculture is giving you £100, is it?—Yes. They came to me first, I think it was last year or the year before, and they said "We shall have to make the education rate up to a penny unless we economise, and your committee will have to be docked so much—you can work on that." I was bound to admit that we had a little money in hand. We could do it with the farm profit; so that we were docked in order to help save the higher education rate, and that is the policy that is pursued all the while.

3454. Then virtually, without the Duke of Bedford, you must stop?—Yes, he could stop us at any time and give us notice to quit.

3455. That is not what I mean—that is a very different question. I mean that without the help of the Duke of Bedford agricultural education in Bedfordshire must stop?—I do not know what the county would do if he were to withdraw all his help. They want to spend as little as they can on it, but if they were put into a corner I do not know what we would do.

3456. I quite see why you answer my question in that way, but that is not what I want. The Duke of Bedford is of such assistance to the County of Bedford that if it were not for him in all probability agricultural education in Bedford would stop and you would lose your farm?—Yes, there is no doubt he has done a good work and is a great aid to agricultural education in the County of Bedford, but what would take place if he were to withdraw his aid is beyond me. I cannot exactly say.

3457. Is it possible that the County Council would then take into consideration the matter of agriculture?—I am afraid it would let Ridgmont as an institution go. But that is only an opinion. I do not know.

3458. We need not stop at the County of Bedford. The Duke of Bedford has been a great acquisition to the agriculture of England, has he not?—Yes.

Mr. A.
Inskip.
14 May, 1907.

3459. From the speech of yours of which I spoke I was very much impressed with the idea that it was no use to expect the farmers to go to education, and that you would have to take education to the farmers?—That is the policy we are trying to pursue.

3460. Just explain that, please, because that is something new?—The idea was to take these classes in sheep-shearing and farriery classes and then teach ploughing to them.

3461. I want to deal with the better education of the farmer. How are you going to take it to him without him coming to the college? Will there be more scientific teaching of the agriculturist, I mean, because I do not quite see what you mean by your remarks here in this speech made in March, 1907, at the Farmers' Club?—The question is rather a difficult one to answer. The only way in which we could do it would be by doing what we did in times past, that is by sending scientific lecturers round to arouse their interest by their speeches on agricultural education.

3462. When you sent the lecturers round did you find the lectures well attended by these farmers?—In some place they were very well attended and in some places the attendance was very meagre, and I do not think they got more popular as time went on. I mean they seemed to know more what to expect. There is no doubt that as the result of the lectures which were given in the county previous to the institution being started on the present lines we got some of our pupils. If it had not been for the lectures that had been delivered on agriculture generally throughout the county, we should not have got the pupils we did, when we charged no fee at all. They did their work and by their means we got pupils to the college that we should not have got if they had not previously broken up and prepared the ground.

3463. Among the very first steps in education by the County Councils was the institution of dairy schools, and were they taken up very favourably in Bedfordshire?—Do you mean travelling dairies?

3464. Yes?—Yes, they were taken up very well in Bedfordshire.

3465. From my own experience of them I should say you originally made very bad butter, and has it improved now?—I am not a butter expert, but I should be glad to see you come down to Bedford and taste some of it.

3466. I come every year?—Will you go to Ridgmont and try it there? We get a good character for good butter there.

3467. You said some pupils were the sons of farmers and some were the sons of persons who wished to take up farming. Who are they?—There are certain people in Bedford who are not farmers themselves but who want their boys to learn farming, and so with other parts of the country. We get a few of that class, but very few. Out of the fifteen we had this year there would be three or four of them come from good-sized holdings of 300 to 500 acre farms. Then there would be nine or ten come from smaller holdings right down to the very small holdings.

3468. But my point is that you made the remark that they were the sons of men not farmers, but who wished to become farmers. They were not agriculturists, and I ask, are they auctioneers or surveyors, or what?—The son of one was an employee with the Midland Railway Company—a collector. But Mr. Druce could answer those questions better than I. He could give you definite facts in each particular case.

3469. You made the remark just now that your lectures were barely successful, and have they been discontinued?—Not altogether discontinued. We employ Mr. Druce, who is the Principal of the College, in lecturing in Bedfordshire.

3470. What were those lectures on?—Various subjects in agriculture, such as the chemistry of manures and lectures on soils.

3471. Did you take up research at all?—No.

3472. Is there much scientific work done at Ridgmont?—No, not scientific work.

3473. It is principally work of a practical nature and character, is it?—Yes.

3474. You mentioned your shoeing classes just now. Do

the owners of horses who are not exactly agriculturists feel that it has done them much good by teaching better shoeing, because there are a great many people who use horses who are not agriculturists, and they have to have their horses shod?—I hear these things well spoken of, and that it is a good thing. They seem satisfied that their horses have been better shod.

3475. They think the work has done good?—Yes.

3476. Now with regard to Luton, I know very well the straw-plaiting industry, but that has very much gone, has it not?—It is booming.

3477. Is it?—It is booming. If you go by you will see new factories and new places going up.

3478. Where do they get the straw from?—I do not know—some from abroad—the bulk of it I should say.

3479. (*By Professor Middleton.*) You are a farmer in the County of Bedford and have been for years, have you not?—I am a farmer's son.

3480. Have you yourself derived any benefit from this educational work which has been taken up, if that is a fair question to ask you?—I consider I have in two ways, not merely with regard to the facts that I have learnt myself from the lectures, but also by making my mind more inquisitive on the subject and ready to pick up other information. It has interested me in the matter.

3481. Then you firmly believe that even for a large farmer in the County of Bedford education is a good thing, though your neighbours do not believe it?—Undoubtedly I do.

3482. You mentioned the fact, I think, some minutes ago in your evidence that you found that grants were readily given for other subjects than agriculture, although these grants were given by farmers?—Yes. It is more easy to get through a grant for Bedford or Luton than for me to get through a grant of any size.

3483. Are the men on your Finance Committee mainly farmers or mainly others?—Mainly others.

3484. The farmers are not absolutely a majority on the County Council. They do not control the grant, do they?—No, but I find on my committee the members who are in business in Luton would support me.

3485. They are more generous than the farmers?—They are sometimes.

3486. (*By the Chairman.*) Your income is only the £500 you get from the county of Bedford, £100 from the Board of Agriculture, and the amount of the subscriptions of the contributing counties, is it?—That and our fees. I should like to give them and how we make them. We have got a grant of £500 from the County Council, and assuming we make £200 on the farm, then we get £100 from the Board of Agriculture, and £200 in fees from the students. That is £1,000.

3487. What do you get from the other counties?—Fees and contributions I ought to have said from other places.

3488. That is included in the sum of £200, is it?—Yes.

3489. When the grant was reduced I understood you to say that the County Council did reduce the grant from £600 to £500?—Yes.

3490. On what do you retrench in order to meet that reduction?—This is on the coming year, and we are not going to retrench.

3491. Then on what do you propose to retrench?—We have money enough to go on with for the present year without retrenching. I think our estimates come up to about £1,200. We shall have to retrench this year or we shall encroach on our funds that we have in hand.

3492. You have a balance on which you can draw?—Yes.

3493. How do you stand now in regard to funds?—We are coming close to the end of our tether. Unless the County Council gives us a larger sum than £500 we shall be unable, in a year or two, to carry on the work we are now carrying on, and the point I wish to make clear is that I do not want the County Council to take advantage of any help we may get from elsewhere in order to reduce their grant.

Mr. EDRIE DRUCE, called and examined.

- Mr. E. Druce. 14 May, 1907. 3494. (By the Chairman.) You are principal of the Agricultural Institute of Ridgmont?—Yes.
3495. Would you explain to the Committee the course of study in the five courses of five weeks each?—We have five courses, two in the summer for women in May and June, and three for men in October, November and January. Each course is self contained. That is the students can come for one course or more. The students are all advised to attend for the full number of courses—that is for the men to be present at the three courses in the winter, and the women to be present at the two courses. The subjects that we take for women are butter making, cream-cheese making, poultry and bee keeping, cookery, and book-keeping, and for the men agriculture, elementary science, poultry and bee keeping, horticulture (vegetables and hardy fruits), veterinary hygiene, elementary surveying and book-keeping. We give instruction on very practical lines—it is essentially practical.
3496. Are the classes well attended?—Yes. Since the present scheme has been in operation, that is since 1902, we have had 77 men and 72 women present altogether. The average age is from 18 to 20 years in both cases, and we have had a steady increase in those taking the full time and a slight decrease in those coming for only one course.
3497. You mean to say they take the five courses—the women take the full course and the men too?—Yes, and we are striving for that, we ask them to come for even only the one five weeks' course. The figures that I give here show that in 1903-1904 we had only two students taking out the full three courses for men, and for the last winter we had 13 who took the three courses. Above half the students are directly connected with the land, and of the remainder about half the parents are in trade, and the other half are of the professional class. Occasionally some of the students are from the labouring classes, but not very many come from the labouring classes.
3498. There are no scholarships at these courses, are there?—Yes, the Committee grant two scholarships to each course if they are applied for, but they will not give the scholarship unless the parents practically cannot afford to pay. The fees are very low—they are only £2 for the five weeks, or eight shillings a week.
3499. Therefore they are £6 for the three courses?—£6 for the three courses.
3500. And for women, is it the same?—It is £4, because the women can only come for two courses for ten weeks.
3501. That is £4?—Yes.
3502. Then the students who come from outside pay the full fees—they pay £10, do they?—They pay £10 for the five weeks.
3503. Therefore for 15 weeks they pay £30?—Yes.
3504. That you think pays the institution?—Yes, it covers the cost to the institution and a little bit over if anything.
3505. To what class do the women belong?—The women are mostly farmers' daughters.
3506. Any dairymaids?—No, they are mostly farmers' daughters who are going back again to work in their parents' places.
3507. Are there in Bedfordshire many factories or creameries?—No, I think there are none.
3508. To what do you attribute that?—It is not a great dairying county. There are only portions of it that are really fit for dairying. Of course all the eastern portion has very little dairying at all. We are conveniently situated on the main line of railway for London, so that any large amount of milk that is produced goes wholesale to London and is not manufactured.
3509. The export of milk is greater than the export of butter, is it?—Considerably. There is very much more of it.
3510. Then with regard to the horticultural classes, who attends those—are they agriculturists?—No, we have not any special horticultural class, but all the men students take horticultural lectures and practically work that as one of their subjects in the ordinary agricultural class.
3511. You have a number of market gardens in Bedfordshire?—Yes, a considerable number.
3512. Do not those market gardeners require special courses?—Not very much so. I should hardly say special

classes, because a lot of gardening is very much on the lines of the farming, only it is more intense; but it is very different from ordinary horticultural work. There is gardening teaching.

3513. Do you say it is the right course for the market gardener that you teach?—Yes, I think it is, only if I had many market gardeners I should give them rather more horticulture and drop entirely, perhaps, the veterinary work.

3514. Of course you would like to extend these courses, would you not?—I should certainly. I should like to have, instead of three fives, two tens, ten weeks before Christmas and ten weeks after.

3515. A twenty weeks' course?—A twenty weeks' course; and I should like, if possible, to get the best of the men that come one year to come back for a second to take another twenty weeks in the second year.

3516. Forty weeks altogether?—Yes.

3517. Then would you institute a summer course?—No, not for the men.

3518. But you would institute a summer course for the women, would you?—Yes, I should have a summer course somewhat similar to that we have at present, but rather extended.

3519. Then as to your students in 1901, 60 per cent. are on the land?—That is hearsay evidence. That is what I have been told by the staff, who have been there before myself.

3520. And several have gone to the Colonies?—Yes. Since 1902 75 per cent. are directly, and 5 per cent. indirectly, connected with agriculture and the land, that is in the nature of land agency work, and 12 per cent. on the land in the Colonies, and 8 per cent. have been lost sight of or left the land.

3521. You do not give them at the end of the full course a certificate or diploma, or anything of that kind, do you?—We give them a certificate of attendance if they have attended and worked satisfactorily. They have to pass an in-college examination set by myself and my colleagues. There are no outside examinations. If they pass that examination satisfactorily we give them a certificate of attendance.

3522. Merely of attendance?—Merely of attendance.

3523. No examination?—There is an examination, and unless they pass the examination they do not get the certificate.

3524. At the end of each course of five weeks there is an examination, is there?—At the end of the fifteen weeks, but it is an inside examination. There is no outside examining body.

3525. You examine them yourselves?—Yes.

3526. The attendance is increasing, is it?—Yes, the attendance is increasing. As you will see from the figures when we started the first year, four years ago, we had something like six students running through the winter, of whom only two stayed the whole winter, and this last past winter we had fifteen at each of the five weeks' courses, and of those fifteen, thirteen were present right through the whole winter, one was present at four classes, and four only came for one.

3527. Are they the sons of farmers?—Yes, or tradesmen mostly.

3528. Small farmers?—Large and small, but I should say a bigger proportion of them are from amongst the smaller farmers.

3529. They value it more, do they?—Yes.

3530. What do you consider the most valuable work conducted by your institute?—I think the most valuable work, and the work that will be most valuable in the long run, is giving instruction to the children of farmers, so that they will go home and put the instruction or knowledge that they get into practice in their own immediate neighbourhood. I think that is not the most showy work—it does not show at once, but that is the work that will prove the most valuable in the long run, and that is what we ought to develop as much as possible.

3531. Do any of your pupils, after they have attended your courses, show any inclination or desire to attend the higher institutions?—A few do, but not very many. I have had some, more among the women students than the

men. I have had three or four in the last six years of women students that have gone to the Kilmarnock School.

3532. In Scotland?—Yes, in Scotland. They went with the idea of taking out the National Dairy Diploma.

3533. And you encourage them to go there?—Yes, we encourage them to go there by advice. There is not any monetary inducement. We give them advice and help them as much as we can if they want it. I have had two students who would have gone to Cambridge if they had had the opportunity, but they had not the means to do it themselves, and there were no means at the county's disposal to send them.

3534. Therefore you would like to have scholarships for those who want to attend the higher schools?—Yes, I should. Of course we should be very particular about granting them. One does not want to give scholarships to anybody except to those to whom they would really do good.

3535. Then your main difficulty is the lack of funds?—Yes, I think for my own personal opinion it is entirely due to the Act of 1902, which took the "whisky money," so to term it, and lumped it with the rate money for higher education generally, and I think if we could go back to some method by which the Board of Agriculture could take from the Treasury the proportion of the "whisky money" that was spent on agricultural education before the Act of 1902 came into force, and had that money entirely, and our Agricultural Education Committees or governing bodies were absolutely independent of County Councils, and all the money that we got was simply from the Board, we should be better off than we are at present. Of course that is possibly a biggish order, and it would be almost impossible to carry it out, but I believe that would be the most satisfactory way. Then the Board could grant sums to the different County Councils, and grant them in such proportion as the Board thought fit in accordance with the work that each county did, and we should then have more inter-communication between the different counties, because whatever we did in one county to help a neighbouring county we should not be doing something with, say, Hertfordshire money to help Cambridgeshire, and we should never have it thrown in our teeth that we are simply using money coming from the country generally to help somebody in a particular county.

3536. You think that a certain amount of the "whisky money" should be set aside for agricultural education?—Certainly.

3537. And that then the Board of Agriculture should grant in proportion to that?—Yes, I think that the Board of Agriculture should have the whole of that money instead of a proportion of the "whisky money" being given to the County Council as it is now. It should be taken away from them and given to the Board of Agriculture entirely.

3538. You want to intercept it?—Yes, I do not want it to go to the County Council at all.

3539. (By Lord Belper.) You want to take away the money from the County Council which they have already got for secondary education?—Yes, but I should, of course, only take a proportion.

3540. That would not be a very popular proposal?—Possibly not.

3541. (By the Chairman.) But you would give it after it had been intercepted to the Board of Agriculture and the Board of Agriculture would give that money and its own to the Education Committee of the County Council, and you would not have the Board of Agriculture administer it itself?—No, I should have the Board of Agriculture administer it through a committee similar to what we have in Bedfordshire, which is composed of certain members of the County Council and certain elected members by agricultural societies.

3542. Therefore the County Council would be represented on the body which administered those funds?—Certainly, they would be represented, but they would not have the governing voice.

3543. What is your objection to the County Council administering the money?—Because the County Council, I think, will spend more than the proper proportion on ordinary secondary education work, and not technical work, and the proportion of the "whisky money" that ought to go, according to my mind, to technical work does not go. It goes to ordinary secondary work.

3544. (By Lord Belper.) On that let me ask what

is the advantage of taking away money which is now given to the County Councils for secondary education, in order to give it through the Board of Agriculture to a special part of that education, namely, agricultural education? All the witnesses have admitted that they want more from the Board of Agriculture, but I do not understand what is the special advantage in the Board of Agriculture taking away with one hand money which is given to them in order to give it to a special purpose with the other hand?—I think if the Board of Agriculture took this money matters would be put right with regard to the proportion of the "whisky money" that was spent on agricultural education up to the time before the Act of 1902.

3545. But surely it is hardly worth while going back to see what proportion should have been given several years ago before the system of secondary education was developed?—I think the more secondary education is developed the less money we shall get for agricultural education.

3546. (By the Chairman.) Your point is that you want the money earmarked for the purpose of agricultural education?—Certainly.

3547. And you think that can only be done by the Board of Agriculture setting it aside?—I think that would be the best way to do it. I would not like to say it is the only way, but it is the best way.

3548. (By Lord Belper.) Are you aware of the difficulty that occurred, before the "whisky money" was allowed, to be given for secondary and technical education, in distinguishing between technical and secondary education? There were constant difficulties?—Certainly.

3549. Are not those difficulties now constantly occurring?—I know that there would be difficulties.

3550. Then I do not know why you wish to return to that state of things?—This would be entirely for agricultural education. I do not think we get our proper proportion.

3551. I do not know what you call the proper proportion. It may be the proportion given ten years ago, or the proportion given now; but I do not understand the term "proper proportion." But you want more money for agricultural education?—Certainly; and I think we do not get our proper proportion of the "whisky money."

3552. (By the Chairman.) Your view is that before 1902 more money was obtained from this source?—Certainly.

3553. Since then the need for more money has been clearly shown by the development of various agricultural institutions for agricultural education?—Certainly.

3554. Therefore your point is that it is necessary that the Board of Agriculture should have the power of deciding as to the amount of money which is wanted and which should be taken from the "whisky money" in order to add to the amount of their own grants?—Yes.

3555. That is your view?—Yes, that is my view; it may be put like that.

3556. (By Mr. Latham.) You will know there are a great many counties unable to allocate any money to agriculture?—Yes.

3557. How would you treat those?—I should treat those on the same scale. If they did not like to grant some, let them go without it. As to those who did grant money before, let them go on and go ahead, and work it for the benefit of each. I do not say you can do it in that way entirely, because that is perhaps too drastic a method; but do not give them so much. I think those who have tried to do the work should get the benefit of it, and those who did not, and were behindhand with it, should be allowed to suffer.

3558. (By the Chairman.) There is at present no active hostility from the farmers, is there?—Very little active hostility.

3559. Especially the younger farmers are fully alive to the necessity of this work, are they not?—Yes; it is the older ones, that have either been very successful or very unsuccessful, who are against us, but the ones who are doing pretty well and the younger generation of men from 30 to 40 are pretty well with us.

3560. The most popular instruction is giving in ploughing and sheep-shearing, and so on?—Yes, at the present time.

3561. Would you explain to the Committee your scheme with regard to experiments?—My scheme to arrange experiments is practically based on the scheme that was issued by the Board of Agriculture some three or four years ago for all our manurial experiments. Those are the lines we work on.

Mr.
E. Druce.
14 May, 1907.

Mr.
E. Druce.
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14 May, 1907.

Then in addition to that I have a considerable number of experiments on all the different varieties of farm crops, and the way I have worked these is to have demonstration plots upon different farms in the county. We go to the farmer and arrange with him to have certain plots on his farm. The Committee pay for the things we demonstrate with. For instance, if we were demonstrating with varieties they would pay for the seed, and if we were demonstrating with manures they would pay for the manures. The farmer does all the work and gets the crop. We have made use of a few plots during the summer time, and when we are there we explain and point out the results to the farmers present.

3562. Who pays for the manure?—The Committee pays if it is manure, and if it is varieties the Committee pay for the seed.

3563. Do the farmers come to you and ask for experiments to be made on their farms?—Not very many. I have had a few do that. They will come to me and ask for an experiment in their locality, but they would sooner have it on their neighbour's farm. But we have many of them coming and saying, "We should like experimental plots in our parish, or the next parish, and Mr. So-and-So will be just the farmer for you to go to."

3564. Then lectures are also given?—Yes. I give a certain number of lectures myself on agriculture, and we have a poultry and bee-keeping lecturer who is fully occupied now for the time we employ him.

3565. Are those lectures well attended?—They are quite well attended.

3566. There is no difficulty in securing audiences?—No; at the present time I should say we have none. We have this man, and we have applications for the man to be sent, but we do not send him unless we have an application.

3567. You could give more extension to these lectures, could you not?—We could give a little more if we had more money.

3568. Then there is the evening school for stock management in the village?—We tried that as a kind of experiment this winter. I tried that myself. It was an evening school for young lads and farmers' sons who had left the ordinary elementary school—fellows from 15 to 18 years of age. I gave them lectures and asked them to take notes and write out what I had told them on the management of stock, during the winter evenings, one evening a week. It was 24 hours altogether. We had a fair attendance. It was only a small country village, and we had about nine or 10 there, and we charged them a small fee of 6d. to start with, and certainly all those who paid the 6d. attended regularly. I set them a short examination at the end, and I got some very useful answers from them. It is a thing that might be developed and carried out in many other country villages if one had a junior on one's staff to do it. I mean it is a junior's work. It is work that should not cost a very great deal of money. If you pay a man a big fee it becomes too expensive.

3569. They were not self-supporting?—No, certainly not. The fees only came to something like 5s. or 6s. altogether.

3570. The County Council simply supplemented with the difference?—As a matter of fact, I did it as an experiment. There was no fee. It came out of my own yearly salary without any extra fees, in order that I might try it, but in subsequent years it would mean a small fee to the lecturer. Then we have not much accommodation at Ridgmont for giving scientific education. We have not any laboratory, and very little accommodation for that work, although I believe it would be a very good plan if we could do it. We get a fair number of general enquiries, but as to pure scientific points that want a laboratory to deal with, or any research work, we have to pass it to somebody else.

3571. You think more development could be given to work of that kind?—Certainly.

3572. That is if only you had the fees?—Yes, if only we had the fees and the accommodation.

3573. You say that to give instruction in manual processes is of importance?—Yes, the manual processes are of considerable importance. We have been struggling with them for some time, and I think we have settled in regard to certain divisions of it, but we have not settled it entirely. The horse-shoeing classes, which we hold at certain centres in April and May, are held at a local forge, and the teacher is a thoroughly competent blacksmith. I have got a good man in the county, but

I should think in most other counties they could find a man equally well. The pupils do the actual making and fitting of the shoes. A veterinary surgeon attends on two evenings and gives a lecture of one hour upon the construction and chief diseases of the foot. The cost is about 30s. for each meeting of the class.

3574. That is provided entirely by the County Council?—Yes. My average attendance will be, for the last two years, about nine for each meeting of each class, so that it runs to a little over 3s. 3d. per student per night.

3575. Then at the county show there is a competition or examination in farriery, is there?—Yes, and it is open to those who have attended the classes. Of course, the cost of that comes from the County Education Committee—from my own committee of the County Council. The Agricultural Society give us a small amount towards the erecting of the forge, and, of course, there is free admission to all the competitors. It helps the Agricultural Society somewhat, so that they make a certain amount which goes towards expenses.

3576. Then you have a class in sheep shearing?—We have a class in sheep shearing. We had it in past years for hand shearing, and in the last two seasons I have had it entirely for shearing by machinery. I send a competent man round to give instruction. The class meets on three consecutive days. A grant of 2s. 6d. each is made to not more than 30 pupils, provided they produce a certificate from their employer that they are working for a weekly wage and are regularly employed.

3577. That is provided by the County Council?—It is provided by the County Council.

3578. Then as to ploughing?—A ploughing match is held, the entries for which close early. After the entries have been received a competent instructor is sent round and he spends a day on each farm from which entries have come, and instructs the entrants whilst at their work. Then a competition comes afterwards, for which there are money prizes, all the expense of which comes out of the County Council.

3579. Then you think that the farm could be made of more use?—I do think so. For breeding first-class animals and for growing valuable seeds for sale to people in the county at a reasonable figure. Of course it is largely from lack of funds that one is prevented from doing more, because there are not funds to start the thing. Also, I think we ought to do more than we have done up to the present to assist and develop agricultural co-operation.

3580. You think agricultural co-operation should be extended?—It should certainly be extended, but as to how we are to help that and do it, I could not be certain as to the best method. But whenever any official has an opportunity of working in this way, he should do what he can to help agricultural co-operation. I know in our own county we started a society some five or six miles from Ridgmont, at a place called Clophill, within the last two years, and we have had some demonstration plots for them, on potatoes, that were run by that co-operative society. They took a piece of land at a low rent from the landlord, Lord Lucas. I gave the results in figures, and they published the results themselves, and distributed them amongst the members. We had a large number of their members looking on and coming round every week to see how it was going on.

3581. The members of that co-operative society were farmers, were they?—Farmers and market gardeners, and some labourers.

3582. And the results were satisfactory?—Very satisfactory.

3583. And that will go on, will it?—That will go on. They are taking it on again this year now. Of course we have only got the one co-operative society in the county at present, but if there were others I should make the same suggestions to them.

3584. And work them on the same lines?—And work them somewhat on the same lines.

3585. (By Lord Belper.) I do not quite understand your co-operative society. Is it a scientific society for co-operative farming?—No; it is an ordinary co-operative society.

3586. But there are so many different classes of co-operative societies, and that is what I want to find out?—It is one of the co-operative societies working in conjunction with the Agricultural Organisation Society for the disposal of their produce and the purchase of their requirements. They thought that it would be a very good thing for their members to have information about manuring potatoes, and

Mr.
E. Druce.
14 May, 1907.

so they had a committee appointed, which took a portion of the allotment land in the parish from the landlord, and the co-operative society asked that it should be done, and I conducted the experiments on the land, and these are going on now.

3587. I did not quite understand your suggestion that you considered it desirable that the county authorities should assist the development of co-operation. I did not quite understand how growing potatoes would develop co-operation, and I do not quite see it now. It is quite true you encourage good farming in the way of growing potatoes, but I do not see quite how it develops co-operation?—I think it develops co-operation in that the men see it is a good thing to have demonstrations or experiments in their localities. If they had not combined they probably would not have had them, and they would not have learnt the lessons.

3588. But that is a very indirect object in connection with agricultural co-operation?—Yes, it is only a branch subject.

3589. (*By Lord Barnard.*) It is, I think, well known that the gentleman whom you named just now, Lord Lucas, is a very enthusiastic supporter and promoter of agricultural co-operation, is not he?—Yes, he is.

3590. Do you not think it would be rather extending the operations of higher agricultural instruction to ask that the development of co-operation should be included amongst its operations?—No, I do not think so. You say take higher education in that way, but I reckon we do not do enough for what we might call lower agricultural instruction. There is plenty done in the higher work with collegiate centres, and so forth, but it would be only in the smaller centres and county authorities, I mean amongst the smaller people.

3591. I gather you think the funds provided by the County Council out of the "whisky money" and by the Board of Agriculture might usefully be utilised, amongst other things, for developing agricultural co-operation?—Yes.

3592. That is your opinion?—Yes, that is my opinion.

3593. Then I should like to ask you a question on another subject which you have just mentioned to the Chairman. You think another object for which the same fund could be utilised would be where there was a farm school, as in your place, for breeding first-class stock. Would not that be enormously costly, in the first place at any rate?—Yes, it would.

3594. Then would not you agree with me in thinking that would be rather outside the sphere of a central or county authority, and rather a matter for individuals?—I think when it is a matter for individuals or in the case of a few men, certainly they would do it, but with a large number of men who put a good deal of capital into the thing they want a big result. With authorities, if they got a reasonable return for the money invested, and kept it together and it gave a return in the value of the animals of the people in the county, I think it would be better for the county.

3595. Then you would not agree with the suggestion that in my opinion such work was more suited to an agricultural society and other associations which did not receive public money?—No; I should like to work in conjunction with agricultural societies, possibly, but I think that it is an object which public money could very well be spent upon, the same as it is in Ireland.

3596. You have a staff of some six or seven officials, and do they reside on your premises?—No, only two reside on the premises. Only the matron and myself are permanently there.

3597. Where is Ridgmont, about?—It is on the line between Bletchley and Bedford on the North-Western. It is about 4 miles from Ampthill and about 2½ miles from Woburn—it adjoins the Royal Agricultural Society's farm.

3598. What happens to the staff during the interval between the courses?—My own time is fairly well occupied, and the matron and dairy teacher, who has the house to look after, has her time fairly well occupied. The assistant dairy teacher is only there for 12 or 13 weeks in the summer, and then there is a 10 weeks' course. My science lecturer is only appointed for six months from the beginning of October for 26 weeks, and the other portion only come on certain days in the week. They are not employed the whole of their time.

3599. They do not receive full annual salaries?—No, certainly not.

3600. It struck me the cost of your institution was rather low?—Yes, the salaries are in proportion to the work.

3601. Have you a free hand, or do the committee control you to a very large extent?—Not very largely.

3602. I should like to ask you what sort of an amount of previous education your students have had in the county?—The majority of them have been to a secondary school, a very large number of them have either been to the Bedford Modern School or to the County School of Bedford or to the Grammar School at Dunstable. Of course a large number of boys in Bedford go to the Modern School.

3603. Dunstable School is an endowed school?—Yes.

3604. And Bedford School is another?—Yes.

3605. So that Bedford is exceptionally situated as to education at the cost of previous generations in regard to secondary education?—Certainly.

3606. Do you consider the pupils when they come to you have been sufficiently well educated to take full advantage of the instruction you can give them?—Yes, I think so.

3607. Then you say you think your courses are too short?—Yes.

3608. You would like to have them longer?—I should like to have them longer.

3609. Is there any compulsion to follow the whole course when a student comes, because I see it is stated in the Government Report that some only come for a portion of the five-weeks' course, and that must be very short?—The figures mean the total number of students we had. But there are a certain number of girl students who come for one summer and take the 10 weeks out, but they would likely come back in the following year and get rubbed up a little in their work, and that would mean those.

3610. You do not insist on a student working for full five weeks?—As a fresh one I would, but not an old one coming back for a few days. We should let them come for a part of the time.

3611. You have said that at the conclusion of the 15 weeks you tested the students by an examination. Therefore, those who go at the end of the first five or ten weeks are not tested at all?—No, they are not.

3612. I think a few of your students go on for higher education?—A few of the girl students have gone, and a few men would have gone, only they have not been able to afford it.

3613. In your opinion you think that in Bedfordshire there is not sufficient provision made for enabling clever boys, or clever girls either, to get further instruction?—No, there is not.

3614. It would be a good thing if there were?—Yes; I think if there was a chance of some scholarships to Cambridge for the boys, or for Kilmarnock, or one of the big dairy schools, for the girls, it would be a great advantage.

3615. You state that a great proportion of the students are children of farmers?—Yes.

3616. Is it to educate sons of farmers, or those who wish to take up agricultural pursuits in after-life, because there is a great difference?—It is to educate those who are going to take up agricultural pursuits in after-life.

3617. Irrespective of what their parents may have been?—Certainly. Some are children of tradesmen. Of some of those who have come the parents may be tradesmen, but the child may want to go in for farming.

3618. You have practically told us, then, your County Council does not do all that it might do for agricultural instruction, because it does not give sufficient provision for higher agricultural instruction?—Certainly.

3619. Now is not Cambridge very easily accessible?—You can easily get to Cambridge.

3620. Would it not serve the purpose of the county, in your opinion (because it is entirely a matter of opinion), if arrangements were made by which students could go to Cambridge?—Certainly it would. Cambridge is the most convenient centre for us.

3621. I do not propose to follow you into your proposals for the appropriation of the grant entirely, because I must confess it evoked some astonishment on my part; but I think one of the members of the Committee drew attention to one fact on which I was going to ask you a question, and that is as to why you should take the year 1902, because in some counties they have done nothing, or very little, in 1902. Do you think that such a system as that would promote the general development of agricultural knowledge

in the country?—Yes, I think it would, because, if you take 1902, the “whisky money” had been given some eight or ten years, or eleven years. It was in 1891 or 1892 when the first grant was given—1891 I believe—and it had been given some ten or eleven years in those counties that had been developing pretty well up to their utmost the “whisky money” in that period of eleven years, and I think if you look back to the year 1902 there were very few counties that were not doing a very great deal for agricultural education, and those that were doing very little then have certainly not done more since.

3622. Then you will perhaps agree with me that if a grouping of the counties could be made for the purpose you would still like to keep all those counties in watertight compartments, and the counties who had once done nothing should for all time do nothing?—No, not quite. Those are too hard and fast lines. I do not want watertight compartments, but I should like to take the country as a whole, so that we could take a boy from Hertfordshire without the Bedfordshire County Council saying you are spending money on a Hertfordshire boy.

3623. Then would not you agree with me that money received from the State might be applied for the purposes of the country at large?—Certainly.

3624. Even though it was necessarily applied through the medium of one particular institution?—Yes, certainly. I quite agree with you there, but as it is now, if your money comes from the rates (and a certain proportion of it does come from the rates) it is very difficult to differentiate what comes from the country and what comes from the ratepayers.

3625. (*By Lord Belper.*) Were you in the room when the last witness gave evidence?—Yes.

3626. Could you clear up a point I asked about, as to the figure in this book of the £801 grant?—I am afraid I cannot.

3627. At all events I suppose it is a fact that your Council is giving less money now for the purpose of your college and agricultural education than they were giving some years ago?—Certainly.

3628. And that really is the cause of your wishing to transfer it from the County Council to the Board of Agriculture?—Yes. To a great extent I think the Board of Agriculture would be a better body to give it. They would be more in touch with the people carrying out the work.

3629. It would make no difference to you whether the Board of Agriculture acquired this money by grant from the Treasury or whether they got it by taking away money that had been already given for other purposes to the County Council?—Certainly not.

3630. Not at all?—No.

3631. All you are anxious about is to get as much money as you want to get, and as long as you can get it through the Board of Agriculture, which you say is in touch with your work and able to judge of it, it comes to the same thing as to where you get it from?—Yes, except that one does not know quite what the idea of that money when first given to the County Council was. I believe it was meant to be applied to a certain amount of agricultural work, and that it should not be devoted to other things.

3632. Are you aware that that money was not devoted to agriculture when first given, but was given for the purposes of technical education generally, and that the authorities had full power to give it according to what they thought the interest of their county, either for agricultural education or for other technical education?—In a purely agricultural county?

3633. Quite so, but I am quite recognising what your experience is in your county, and therefore that your evidence is largely given on your own experience?—Yes, certainly.

3634. But you think that where another county comes in, where the experience is exactly the reverse, more money might be given for agricultural education than in the days of 1902?—Yes. What one has learned by talking to one's contemporaries in certain other counties shows that they grumble in the same way.

3635. But they have got to pay for elementary education and other matters as well, and I do not know whether you are aware of it, but in consequence of the fact that they have got to put a good deal of money, raised for secondary education, to the training of teachers, they are very much more cramped in regard to the amount of money they have to spend on ordinary education than they were some years ago?—Yes.

3636. I only want to point out to you that there is another side to it.—Certainly, I agree there is another side.

3637. (*Mr. Staveley-Hill.*) You spoke just now of there being not much active hostility to the work. I understand from the position of this farm it is about the centre of the County of Bedford, is it not?—No; hardly the centre.

3638. It is well in Bedfordshire?—Yes, well in Bedfordshire.

3639. Do you notice there is any more friendliness shown by the farmers of the contributing counties of Hertfordshire and Cambridgeshire than there is in Bedfordshire?—No.

3640. It is all the same?—Practically all the same; but of course as contributing counties we do nothing for them except at the Institute. We do not do any outside work for those contributing counties.

3641. If you had more money given to you in the form of a grant or in any other way, should you devote that money to the scientific side of the teaching?—I should try to devote a portion of it to the answering of practical questions, and questions that could only be answered by scientific research for the farmers.

3642. That would make the institution more popular amongst the farmers, would it?—I think it would, certainly; but I should certainly devote a good deal of the money, if we had more, to teaching pupils in the Institute. I think we might do very much more in that way than we do.

3643. I notice that you allude to sheep-shearing and horse-shoeing, and so on, and do you give any practical instruction in draining?—No; we have never done anything in that way.

3644. Why not, in a county like Bedfordshire and the surrounding counties? Do you not think it is necessary?—It is certainly necessary.

3645. I should have thought it was one of the most necessary things.—It is certainly necessary; but there is one thing in it, and that is this, that the majority of the tenants look upon draining as a landlord's job, and none of the ordinary labourers would do it.

3646. It is common knowledge throughout England, is it not, that a good many of these things are dying out, or rather the knowledge of them? It is very difficult to find practical men to do this work, is it not?—I think it is. I think that is quite our idea, but I must confess it is rather a new idea to me to take drainage.

3647. But you think it might be considered if you had more opportunities?—Yes, certainly.

3649. (*By Lord Moreton.*) Why do your people go to Kilmarnock, in Scotland, which is a long and expensive journey, rather than go to certain other institutions which I need not specify by name, but which we all know exist?—Because both my dairy teachers and myself think they get better training in Kilmarnock.

3650. When at Kilmarnock do they go in for the Diploma in Dairying?—Yes.

3651. Have they been fairly successful?—No, they have not been so successful as we might have hoped.

3652. Is it easier for a pupil to study dairying and go in for a diploma and pass satisfactorily if the examination is held at the place where the tuition has been given?—Yes, I think that would be so.

3653. There is rather an advantage, or there may be an advantage very possibly, in that?—Certainly, I believe that is so, but of course that examination is likewise held in England.

3654. I am perfectly aware of that, and that is what made me ask the question why they went to Scotland.—Just so.

3655. Now one or two questions about stock on the farm. What class of stock do you keep at present?—The ordinary mixed dairy herd, and a mixed breeding flock—the ordinary butcher's breeding flock, and some pure-bred pigs.

3656. Have you formed any idea of what it would cost in your county if they ventured to adopt this idea of breeding first-class stock on a 270-acre farm?—If one did it in a tentative fashion to begin with, and if one had another £500 or £600 of capital, one could start it at that. It would take time to work up.

3657. Do you think it would make the farm popular amongst the neighbouring stock dealers if they felt that you were underselling them with animals bred with county money? Would not it tend to cause some local jealousies?—It might cause a certain amount of local jealousy,

but it would cause a great deal more satisfaction amongst the majority than it would cause dissatisfaction among the minority.

3658. You spoke of pure-bred stock—that is stud animals?—Yes.

3659. Stallions and bulls and rams?—Yes.

3660. Are they unable to get them now?—They have to pay a pretty high figure for them if they can get them.

3661. Would you sell them?—Yes, at the ordinary market price of the day if we could produce them at a lower figure.

3662. (By Mr. Latham.) Do you think that, knowing the opposition there is in Bedfordshire and the surrounding counties to this higher education, you could formulate any scheme that would make it less opposed than it is now?—I do not quite understand your question.

3663. You propose that the allocation of the “whisky money” should be used in that way. I know Bedfordshire pretty well and I think there is a very strong feeling against this higher education, and do you think there is any scheme that could possibly be proposed that would make them go further than the scheme which you propose?—I do not think it would make them more against it than they are at the present time.

3664. Not if you take the money away from them and raise the rates?—If you raise the rates you do so for the secondary work, and the higher education committee, having the doing of the secondary work, would be the people to raise the rates. The agricultural committee would be clear of the rates altogether, and if they said anything to us we should say we do not get a farthing from the rates.

3665. The money raised from the rates now would be taken away, and I do not see how you would have any more money to go for higher education with. Would it not be better to prove that the Treasury should give more money to the Board of Agriculture, and leave the rest of the money where it is now. Do not you think that is a much better thing?—It would be a much better thing to get more money from the Treasury, but still I think it would be far better if the Board of Agriculture had practically the whole of this money that goes to agricultural education.

3666. In my experience a great many very large farmers feel up to the present time that there is no need whatever to get higher education both in Bedfordshire and other counties in England, and if you take the “whisky money” and the money used for secondary education away, and make their rates go up, that would be the surest way possible to make them dislike it more?—I should not take it all away, but only the same proportion of the “whisky money” that was spent before the Education Act came into force.

3667. Then what are you going to do with the counties that never gave anything at all to it?—I think if you went back before the Act of 1902 you would find the majority of the counties did give very largely.

3668. I beg your pardon, a very large number did not give.—I do not think so, though I have not got the figures.

3669. I am quite satisfied I never made myself so unpopular in my county as when I used to say that if they gave the money entirely to the rates we should lose it altogether.—But that was before 1902.

3670. Yes. There was a great desire in the Berkshire County Council, as in many other County Councils, to give money entirely to the rates.—If you take it down to 1902, a lot of these County Councils had learned sense before 1902, and had devoted a considerable proportion of that sum to agricultural education.

3671. And when 1902 came in they lost that sense, did they?—I do not say that at all.

3672. You spoke of the children of the farmers. What do you mean by the children of the farmers?—I meant the boys and girls and men and women. I did not like to say sons and daughters. It was to prevent repeating myself, that is all. I mentioned elsewhere in my proof that the average age is between 18 and 20 years.

3673. Then they would hardly be called children?—However, that is all I meant.

3674. You do not wish to make your place look as if it were simply a place for children?—No, but I mentioned the average age of 18 to 20 years. We do not take anybody under 16.

3675. Do you think it is an advantage to them to have these few examinations that you give, simply from inside?

—I think for a 15-weeks' course it is not worth the expense of going through an outside one.

3676. It would make the certificate of value if it were conducted outside, would it not?—I do not think, for a 15-weeks' course, the certificate ought to give any very great value.

3677. With regard to the short course, you do not seem to hand them any paper or anything which will be of advantage to them afterwards as a reference?—I give them a small certificate saying that they have been present.

3678. Simply a thing to hang on the wall, which would be no use whatever to them?—Yes.

3679. Do you think that is satisfactory?—If they are going for a five-weeks' course they are satisfied with it, and anybody who has only been for that time does not deserve to have anything more.

3680. You are aware very many of the dairy schools that went about the country only lasted 10 days?—Yes.

3681. And many of the competitors were asked to write an epitome of what they had gone through; and do not you think it was very useful as a matter of reference for them to have done that?—Certainly.

3682. Then if they had been five weeks it would be just as well to have something of the same sort, would it not?—I do not give them a *bona fide* examination, but I always hold a kind of half examination at the end of each five weeks conducted amongst my own staff.

3683. Do not you consider the fact of their having been there only five weeks, and having nothing to take away, they would very soon lose the education which they got?—They can take away something, but there is nothing to show in the way of a certificate. But they have got all the notes and all that sort of information.

3684. But not in any way registered, even by your signature?—Yes, there is my signature. There is a little thing given by me with my signature, showing that they have been there for the five weeks and have attended.

3685. I do not think you were very strong in your explanation of your experiments. What were they?—I call them demonstrations. I do not call them experiments, because they are not to find out anything. They are to show clearly the main points that have been found out at research centres.

3686. Why is it you do not have any summer course for men?—Because the men have plenty of work to do at home.

3687. That rather answers the question that you do teach summer work from a practical point of view?—No, we do not.

3688. With regard to your pupils in shoeing, from what class do you say they are taken?—They are all young blacksmiths, blacksmith apprentices, and blacksmith journeymen.

3689. Such as doormen, and so on?—Yes, that sort of thing.

3690. You say you should have a practical blacksmith as teacher?—Yes.

3691. Is he one of the registered smiths?—He is. He won the championship at the Bath and West Show.

3692. With regard to the lectures the veterinary surgeon gives, does he not lecture by means of diagrams?—No; it is usually by absolute specimens. He brings the horses' feet with him, and the bones and mounted specimens, showing the different cartilages and varieties of bones, and diseased bones and sections of hoofs.

3693. Those are lectures that would be recognised at the Farriers' Company, are they?—Yes; I have had 20 men pass the examination in the last two years, ready to be registered.

3694. What does the evening school of stock management mean?—I went to this school, where there were about 10 or a dozen boys, ploughboys and fellows working amongst cattle, from about 16 to 18 years of age, and I talked to them on points in connection with stock management for about half an hour. Then they had note books, and they wrote down what they heard and what I told them. We then corrected that for about another quarter of an hour, had another short talk with them, and then they repeated it, and wrote some more down, and I corrected what they had written.

3695. You, I believe, got a great deal of your knowledge as to stock management from practical people?—Yes, certainly; I got it all from such people.

3696. As a rule, the management of stock would be very little taught in colleges, and would be of very little value if

Mr.
E. Druce.
14 May, 1907.

Mr.
E. Druce.
14 May, 1907.

it were ?—It is not very largely taught, and some of it is not of very great use.

3697. I do not quite understand what you mean by the pressure of work which has been difficult to carry out, but which now appears to be satisfactory as giving instruction in manual processes ?—In giving instruction in that branch of work we find it very difficult to carry it out satisfactorily.

3698. What is meant by manual processes ?—Ploughing and hedging and ditching and dairying.

3699. More in the nature of labourers' work ?—Yes.

3700. That is what it means ?—Yes.

3701. You have never attempted to teach the young agriculturist manual labour ?—No, except that all the students who are with me do some hedge trimming, and, of course, they do ploughing, and they do a certain amount of thatching. The ones that attend the full course for 15 weeks I have put on the farm two mornings a week doing jobs on the farm, but not to try to make skilled labourers of them.

3702. With regard to that question, have you been teaching any hedging and ditching and thatching and that sort of thing ?—Not hedging and ditching, because I have not been able to get a class to do it. But my committee gave me a grant to do it if I could get the men.

3703. There was quite as much wish for that as for more scientific work in your county, was there not ?—Yes, but we had not been able to do it to satisfaction.

3704. Evidence was given about the great feeling there is against teaching improved agriculture in Bedfordshire, and do you agree with that ?—I think Mr. Inskip was rather too pessimistic. He feels the brunt of it, but when one goes amongst farmers at markets and public places one does not feel it so much as he does.

3705. Do you lecture in the large market towns round the county ?—In most of them, not all.

3706. How have you been met ?—Very well indeed.

3707. Large audiences ?—As good audiences as they ever have, and there are good discussions afterwards, and some rather flattering remarks occasionally are made.

3708. Then you do not agree there has been a good deal of ridicule ?—Certainly not, so far as I am myself concerned.

3709. (*By Dr. Somerville.*) Do I understand you agreed with Mr. Latham when he said that the principles of stock feeding were seldom taught in the colleges, and when they were taught they were not well done ?—I put it not quite in those words. I said they were not fully taught, I think.

3710. Why should the management of stock and the principles of breeding not be properly taught in agricultural colleges ?—I do not know why they should not be taught so, but my experience, and one's own feeling as to what one learns, shows the reverse. One learns far more before coming to an agricultural college and after than one ever learns from any lectures.

3711. I suppose you know that all the higher agricultural colleges in England have got farms attached to them ?—Yes, I think they have now.

3712. At those farms numbers of stock are kept ?—Yes, but of course some of them have only got that recently.

3713. Which one has only got it recently ?—I think Aberystwyth.

3714. Are you aware that at Aberystwyth they have taken a very large number of prizes for stock that they have shown in the past year ? They published a list which showed that their successes in the show ring have been quite phenomenal, and they have in some cases practically swept the decks ?—I have not heard that.

3715. At Bangor they exhibit regularly, and at the Agricultural Society's Shows, with great success ?—Yes.

3716. Are you aware their stock have figured in the publications of the Department of Agriculture of the United States as examples of the best specimens of animals found on this side of the Atlantic ?—No, I did not know that.

3717. With regard to your system of supplying science lectures, do you not find you must constantly change the lecturer, when you practically dismiss the man at the end of each winter and make a fresh engagement ?—We have been very successful up to the present in regard to that. We have only had to change once, because we have been able up to the present to lend the man to one of the grammar

schools in the county during the summer—we practically lend him to them, but they pay him. We hire him out and he comes back again, but of course that would be a difficulty, and if we had more staff one would have preferred to have a man permanently.

3718. Where does the instructor in ploughing, for example, come from ?—He is a man in the county.

3719. Is he a man who has a situation as a ploughman ?—Yes.

3720. You have no difficulty in getting farmers to allow their best ploughman to get away for some days or weeks to give instruction, have you ?—I have not up to the present.

3721. Because if he goes round and gives a day to each pupil, I suppose that means a good many days away from his master's work ?—Yes ; but it might not be a day to each pupil, because you might have two or three pupils on the same farm, and he would do all those in one day, and I have known cases where there have been two farms quite close to one another, and I have arranged for him to go to both farms on the same day. But the man last year was away something like a week or 10 days from his master in all, and the master did not object at all.

3722. A substitute must be found somewhere. I do not suppose the master was satisfied to see his team standing in the stables doing nothing ?—No ; but that is a question for the master himself.

3723. Are the candidates for the certificates of the Worshipful Company of Farriers all apprentice blacksmiths ?—No ; some of them are master men.

3724. But they would not grant a certificate to a young farmer who had passed his course ?—I think they would grant a certificate to anybody who passed the examination.

3725. They are not a close corporation, then ?—No ; only the candidate would have to pay certain fees before he could have his registration.

3726. Do all the students in your school reside there, or do any come in the morning and go away in the evenings ?—A very few of them. Occasionally one comes in that way, but you might say that practically the whole of them are resident.

3727. I suppose you would not take in a man as a resident student if his father lived a couple of miles away ?—Yes, I should.

3728. Would you rather have him inside, even though his home was half an hour's journey off ?—Certainly, I should prefer it.

3729. Even though in the one case public money is being spent upon his maintenance, and in the other case he would obtain it free of the institution ?—Certainly ; because he would not be able to get his full work if he lived some distance away. My men all stay close at hand. If a man was living two or three miles away, one could not expect him to come before nine o'clock.

3730. (*By Mr. Medd.*) What is the average age of the students coming to you ?—About 17, or from 17 to 20.

3731. Do you find that these students as a rule are quite sufficiently qualified to profit by your instructions ?—Yes.

3732. They are not defective, for instance, in arithmetic or spelling, are they ?—Arithmetic is their weakest point.

3733. Where have they generally been educated ?—They have mostly been at secondary schools.

3734. Has any interval elapsed as a rule between their leaving there and coming to you ?—I should say the majority of them come straight from the secondary schools. But a certain number have an interval of about 12 months before coming to me.

3735. Except in regard to arithmetic, they are fairly well trained ?—Yes, but in arithmetic they are decidedly weak.

3736. You are very anxious, are you not, to have your short courses extended ?—Certainly.

3737. And made into one course of 20 weeks or 25 weeks ?—Yes.

3738. What accommodation have you for resident pupils now ?—We have bedroom or dormitory accommodation for 22, but we have no students' common room. We have only one lecture room, and we have got no laboratory at all.

3739. Then you would require a laboratory ; that is essential ?—Yes.

Mr.
E. Druce,
14 May, 1907.

3740. Then the sleeping accommodation for 22 is enough, I suppose?—Yes, that will be ample, I think.

• 3741. What else do you consider essential?—I should say a students' common room is essential. That would be absolutely essential. Then, of course, if we had that number, and especially if we had that number of female students, our dairy would not suit us, and some of the outbuildings for poultry and that sort of thing would not be sufficient.

3742. What is the general condition of your outbuildings? Is that satisfactory?—They are in a very good state of repair. But there are not enough of them.

3743. Do you think it would be practicable eventually to convert your institution into one of the same type as Holmes Chapel when you were at Holmes Chapel: that is to say, a permanent intermediate school?—I think it would be better to remain as it is.

3744. With the exception that you would increase the duration of the courses?—Yes.

3745. But you would not advocate its conversion into a permanent intermediate school?—No, certainly not.

3746. What are the specific directions in which you think its usefulness would be increased, both as an institution itself and in regard to Bedfordshire—taking the institution itself first?—Taking the institution itself first, I think if we could give a full winter course for two winters to a large number of students it would benefit them and give them a larger amount of information which they could put into practice at home, and in that way they would not only improve their own position but they would improve the agriculture in the county too, generally speaking.

3747. They would be pioneers in advanced agriculture wherever they settled?—Yes.

3748. There are no other directions in which you could help Bedfordshire as an institution, are there?—Yes, I think we could do so by doing more in the way of outside lecture work. I rather differ from my chairman on that point. I think there is still quite a lot of room for outside lecture work, provided it is well done.

3749. Now in regard to the training of teachers, you have not done anything yet at Ridgmont?—No, nothing at all.

3750. I suppose it is quite possible for you to organise classes for them?—Yes, it would be possible.

3751. There is no reason why you should not do it, I mean, is there?—No, except that it is a question of finance.

3752. When at Holmes Chapel you had very satisfactory Saturday classes?—Yes.

3753. They were quite a success, were they?—They were quite a success.

3754. There would be no difficulty in organising similar classes at Ridgmont, would there, or has it ever been brought before your local authorities, do you know?—No, but they had their Saturday Teachers' classes in the way of nature-study classes two or three years ago, which met at Bedford. I think Mr. Biffen was the teacher. That has been dropped.

3755. Just as you may say the classes at Holmes Chapel were superior to what one might get at Manchester, so the classes for teachers at an institution like Ridgmont would be better than an urban centre like Bedford?—Certainly.

3756. Now I hope you will suggest it to them.—We want a start. That is the trouble.

3757. (By Mr. Davies.) You are in very close touch with the Agricultural Department at Cambridge, are not you?—Not very close, but we are in close touch.

3758. You always go to them for assistance?—Certainly, if we want any assistance we go to Cambridge before we go anywhere else.

3759. Does your county make any grant?—Yes, it makes a grant of £50 a year.

3760. What is given for that?—They take us over their farm and they give us information we ask for, and send us all their reports, and I believe we could send students at a reduced fee.

3761. Do you ever send students?—No, because, although we could do it, the man could not afford to pay even the reduced fees, and my committee would not give any grant to pay them, or even to help to pay the fees.

3762. That is one of the things that you would like to see done, to prepare young, promising students to take a further course of study at Cambridge, if they won a

scholarship?—Certainly, if we had to do with a worker one would advise him to go to Cambridge and take the course there, if one could assist him.

3763. You regard yourself as more or less a missionary college for Cambridge in your particular scheme, do not you?—Yes, we always look to Cambridge as our head and centre.

3764. So that if you had a grant of money, and the Government were very generous, and you utilised that money for laboratories, would you apply it to chemical work?—Yes, I should like a small laboratory.

3765. Simply for your short courses?—Yes.

3766. You would not try anything beyond the short courses?—No.

3767. Not anything like a three-years' course?—No.

3768. Then with regard to the short courses in villages, you had a very successful class in which you gave instruction in the village?—Yes, it was a fairly successful class for this winter.

3769. Do you think that kind of classes are preferable to public lectures—do they do more good?—I think the majority of them do more good. I think a few public lecturers to start with might create an interest, and then there should be a class like that. A class does a considerable amount of good.

3770. Does it not prepare men to come on to your college if they wish?—Certainly; a certain number of them would come, and then a certain number of the labouring population would become better-class labourers who get no chance of any other thing. They go to a popular lecture, and it is rather beyond them, perhaps; but yet there is an evening school, in any particular subject, and the teacher can bring himself down to their level, and put things before them in more or less homely language, which could not be done otherwise.

3771. Did you find they appreciated the instruction you gave them?—Yes, certainly in that case they did, decidedly.

3772. None of them had been to a secondary school, had they?—No; none of them had anything but the ordinary elementary education.

3773. After the course of lectures you gave them at this village, would they be able to take your short course?—No, I do not think they would. The majority of them that went to the class were boys earning 6s. to 7s. a week.

3774. Then with regard to the chemistry, you have not an agricultural chemist?—No.

3775. Who does the agricultural chemistry?—The county analyst.

3776. Where does he reside?—He resides in London.

3777. There is no chance of your being able to appoint an agricultural chemist who would be also responsible to the county?—No, I do not think so. I think there would be a good deal of opposition to that.

3778. By the County Council?—Yes. I think there would be opposition to it. I should not like to say definitely, but I fancy there would be a good deal of opposition.

3779. But if you had laboratories there it might be all right?—I should have a chemist there, or a science teacher.

3780. You said, I think, that students ought to know something about practical agriculture before coming to the college. Do you make it a rule to tell a student that he must have put in so many months on a farm as a practical farmer?—No, we do not make that stipulation.

3781. But you think it would be advisable to do so, do you?—No; not to make it a stipulation, but to suggest to a possible student that he should put some time in on a farm. But I think as things are at present it would be rather too drastic to say that he must do so before he comes to the Institute.

3782. That is your reason; it is not because you do not think he ought to do so?—No; it would be rather too drastic, and choke too many men off who would become really useful students.

3783. (By Lord Barnard.) About draining, I suppose you would scarcely deny that draining is one of the most important and possibly at one time one of the most contentious matters connected with the principles of agriculture?—Certainly that is so.

3784. The reason you gave that it is not necessary that any instruction should be given in it in such an institution as yours is because it is a "landlord's job"?—I did not mean it as instruction in the institution, because the

Mr.
E. Druce.
14 May, 1907.

pupils that are in the institution are taught the principles of draining fully. The question I intended to answer was that we do not give any practical instruction in drainage of the same nature as our sheep-shearing instruction or ploughing.

3785. But you have given us a good deal of information as to farriery, which is given so as to enable men to learn to earn their living as farriers, and I should have thought that to teach them to earn their living as drainers would be quite as important?—It is important, but a man who does drainage would be employed by a big estate.

3786. You do not think that big estates are a sufficiently important integral part of British institutions to be worth expending money on in that way, do you?—I think that has escaped rather my own observation, and I think it has escaped the Committee's observation.

3787. Is it your view that the owners of big estates should themselves provide instruction for their drainers, or how is the drainer to be instructed?—I think now, having had my attention called to the question, the drainer should be instructed by the County Council the same as other men. Only it is a point that had not occurred to me before it was mentioned in this room. That was all.

3788. I did not want it to go forth that you were under the impression that the landlord was not a person who need be taken into consideration.—Certainly not.

3789. (*By the Chairman.*) Then with regard to the "whisky money," my interpretation of the theory that you have developed before the Committee is this, that there is the county aid to which Lord Belper alluded and that an adequate amount of "whisky money" is spent on agricultural education?—Yes.

3790. That is county aid?—Yes.

3791. That county therefore does its duty, and that county you would leave alone—you would not interfere obviously with a county that was doing its duty in agricultural education?—No, certainly not.

3792. But you would say to a county which was doing nothing for agricultural education that you would give the Board of Agriculture (I am speaking of your theory now) power to intercept the "whisky money" in county B, so as to level up county B with county A?—No, it is not quite like that. That was not quite my theory. My theory was that to make things level, even if the county was doing its duty and giving the money, that money should be taken away from them.

3793. Then your point is that the Board of Agriculture should have a certain amount of control over the "whisky money," so as to ensure that the "whisky money" spent throughout England in all the counties should be proportional to the wants of agricultural education?—Certainly.

3794. That is the idea?—That is the idea, to put it shortly.

3795. In other words, you want the Board of Agriculture to have control over the spending powers of the County Councils with regard to agricultural education?—Certainly.

3796. And to co-ordinate it over the whole county?—Certainly.

3797. That is what I understood. You do not want to stereotype, of course, the circumstances of 1902, in which some counties did less and some more?—No.

3798. But your object would be to ensure in future the spending of such an amount of the "whisky money" in all the counties more in that way?—Yes, certainly. The reason why I took 1902 was because that was when the change came.

3799. I only wanted to make clear what your opinion was.—That is it.

3800. Now you have stated that you consider that more was being done for higher agricultural education than for lower agricultural education?—Certainly.

3801. That is, the grants of the Board of Agriculture were given more to higher education than to lower education, and I might ask what, according to your meaning, should be done for what you call lower agricultural education, by which, I suppose, you mean agricultural education to be given to those who at the age of 16 or 17 have to stop and cannot therefore go to colleges and so on. Would you give to the Committee your idea as to what kind of education or what kind of institutions should be provided for those who would leave the elementary school and at the same time are unable to go on to college, but are able, or would be able, to attend institutions in their neighbourhood of the character of a higher elementary school?—I think an institution of a similar nature to what we have at Ridgmont is the class of institution that should be provided, where they could come for the winter-time, when the work at home is not so heavy. They could come there and get a certain amount of scientific information, a good deal of practical agriculture, and a good deal of the theoretical side of agriculture with its bearing on practice. I think during the winter months that could be done at a low cost, and they could then go back to their homes in the spring when they are wanted and work during the summer-time.

3802. You would multiply winter schools for that class of pupils, and have summer classes supplementary?—You might have an odd summer course for some students.

3803. Would you multiply the winter courses?—Certainly I would multiply the winter courses.

3804. You would have institutions where agriculture was taught practically mainly, with a certain number of scientific lectures in some shape?—Yes.

3805. On purely elementary science?—Yes.

3806. That would not be agricultural science?—No.

3807. But agriculture would be taught at these institutions?—Yes.

3808. These institutions you would multiply?—Yes.

3809. And as to the farmers' sons who cannot attend secondary schools where general education is given to prepare them for Universities, these are the institutions you contemplate would be intended for them?—They would be.

3810. You think that the giving of such instruction, practically supplemented by scientific elementary teaching, would be of very great value to the farming community?—I certainly think so.

EIGHTH DAY.

Wednesday, 15th May, 1907.

PRESENT

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

The Lord BELFER.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. W. M. CHILDS, M.A., called and examined.

3811. (*By the Chairman.*) You are the Principal of the University College, Reading?—Yes.

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3812. Will you give the Committee some account of the history and development of the Institution?—The University College at Reading was founded in 1892. It became a University College in 1902 after inspection by the Treasury Commissioners. It has grown so rapidly that its original buildings became inadequate, and in the last three years the whole institution has been removed to a new site, exceeding five acres, in the middle of Reading, and new buildings have been erected. The Council of the University College contains representatives of the Reading Town Council and the Reading Education Committee, of the University of Oxford, and of the County Councils of Berkshire, Buckinghamshire, Dorset and Oxon. I can give any further particulars about the College generally the Committee require. The College is organised in seven Departments, the usual Literary and Scientific Departments, Agriculture, Horticulture, and then we have Departments for the teaching of Fine Art, Music, and a number of miscellaneous subjects in evening classes. I ought, perhaps, to say that we have a somewhat extensive provision for the residence of students who are not resident in the town or in the immediate neighbourhood. Of such students we have about 150 altogether. We have, for example, two hostels for the reception of women students, which between them accommodate about 80 women. One of those is a new building and the other is an adapted building. Then we have lately received a great benefaction from Lady Wantage, who is a Vice-President of the College, intended for the benefit of men students. I have here one or two photographs of the design for this building which the Committee may like to see. (*Handing same.*) It is an unusually large and appropriate building for the reception of men students. It will accommodate about eighty students of all departments, including the agricultural and horticultural men students whose homes are at a distance from Reading. I ought perhaps to have mentioned at the beginning that among the papers which I think have been circulated to the Committee, on the first page there is a map of Reading which shows the position of the College and of the site of this new hall of residence, and it also shows that the men's hall of residence lies between the College where the scientific teaching is given and the farm, which is two-and-a-half miles away from the College, where practical and experimental work is done. At the present moment this building, which is to be called Wantage Hall, is not completed, and the men students reside in lodgings. The total charge for a man student, and also for a woman student, for a session of thirty weeks for board, lodging and tuition is about £50 to £60. Some of the students stay forty weeks, and it would go up at the rate of a guinea a week for that period. That was all I proposed to say with regard to the College generally. I would now ask leave to refer a little to the agricultural side more particularly. The Department of Agriculture was formed one year after the foundation of the College in 1893, and it was based on grants which were received from the County Councils around, and especially from the Board of Agriculture. The grant that was first paid to us from the Board

amounted to £150. That was in 1893. In 1894 the University of Oxford, with which the College has always for certain purposes been associated, passed decrees of Convocation which established a Joint Committee representing the University and the College. The Joint Committee, to be more exact, contains representatives of the Oxford University Extension Delegation, and of the College Council. In 1896, two years after that decree was passed, two representatives were added to the Joint Committee from the Royal Agricultural Society, and in 1904 two representatives of the Royal Horticultural Society were added. The Joint Committee is the body which grants the more important of the diplomas in Agriculture, Horticulture and Dairying, which are sought by the students of the College. Then I think the next important step was in 1895, when the British Dairy Farmers' Association moved their Institute, I have understood under pressure from the Board of Agriculture, from Aylesbury to Reading, in order that it might be associated with a scientific institution, and a Joint Committee was then appointed which represents both the Association of the British Dairy Farmers' and the Council of the College. I can give the relationship between the Dairy and the College if you would like me to do so?

3813. Certainly.—The Institution was built in 1896, and the land on which it stands is the freehold property of the College; it cost the College upwards of £6,000. One of the schedules which I have circulated will give that information. It was agreed that the College and the Association should each contribute annually half the deficit, if any, that is incurred in the maintenance of the Dairy Institute. The Institute is let to the Association by the College at an annual rental of £120, and upon the other hand the Institute pays the College £100 a year in order to have such scientific instruction from the College staff proper as the dairy students may require. I might add that from our point of view we do not regard that as a hard and fast bargain. We try to give, and the Director of the Agricultural Department will confirm what I say, as much scientific instruction as we can, and to induce as many of the dairy students as we can to receive scientific instruction from the College staff. The next step in this agricultural development was in 1902 when we organised, in association with the Agricultural Department, the teaching of Horticulture in a Department of Horticulture. Previously a certain amount of horticultural work had been done at Reading in connection with the Lady Warwick Hostel, which at one time was established at Reading, but which left Reading some years ago. In 1902 we at the College resolved to organise this Horticultural teaching for which we found a demand on our own account. Our horticultural ground adjoins the College site; it is marked on the first of those plans, adjoining the buildings. It is practically part of our grounds; it extends over 3 acres, and we hold it on lease from Mr. Alfred Palmer. It is an admirable piece of ground because it was formerly in the occupation of Messrs. Sutton at Reading, and we entered upon it therefore with many advantages due to their previous occupation, and to the kindness of that firm. The Horticultural Diplomas, of which I will speak later,

(*Mr. W. M. Childs.*)

15 May, 1907.

3812d

3812e

3813a

Mr. W. M.
Childs.

15 May, 1907.

3813b

are sanctioned by the Oxford and Reading Joint Committee as I think I mentioned, and this garden, or practical teaching ground, was opened in 1904 by Lord Onslow when he was the President of the Board of Agriculture. Lastly in 1903 the Council bought a farm of 145 acres at Shinfield. I am afraid I have not been able to show that on the map, but I have shown the road which leads to the farm, and, as I have said, it is about two miles or rather more from the College itself. I would, therefore, point out that the provision at Reading in respect of agricultural and horticultural instruction and research is, as we think, rather unusually complete, and may be thus summarised; that you have two Departments, working in intimate contact, of Agriculture and Horticulture, each with a specialised staff (not as large as we think it ought to be), each in contact with and utilising to the maximum extent the scientific teaching that is naturally to be found in a University College, and each, also, deriving a certain amount of advantage from the existing administrative organisation of the College. In the second place, there is the farm for practical and experimental teaching. In the third place, we have a fruit station of 11 acres on the College farm, planted for the purpose of teaching fruit cultivation. In the fourth place, we have a poultry farm of 40 acres at Theale, five miles from Reading, easily accessible by rail, a farm which is not our property, but which we have the control over for practical purposes. There are buildings on that farm which we have erected partly at our own expense for teaching and experimental purposes. Lastly, we have the British Dairy Institute which is a most valuable adjunct or ally of our work, and works in the closest association with the Agricultural Department.

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3814. You have a Council governing the College?—Yes.

3815. How are the members of that Council elected?—Some of them are elected by the Court of Governors of the College; some of them are co-opted by the Council itself, and some are elected by Local Authorities in the neighbourhood, such as the Corporation of Reading, and the County Councils of the neighbouring Counties, Berkshire, Oxford and Bucks., which make financial contributions to the College. I think that is the complete account of the composition of the Council.

3816. The Court of Governors is elected by the Governors?—The Court of Governors are the Governors.

3817. They are a numerous body?—Yes, they are a numerous body.

3818. Are the Governors those who have contributed to the funds of the Institution?—Yes.

3819. Benefactors we may say?—They are benefactors.

3820. Then there is an Academic Board?—Yes, an Academic Board is appointed by the Council and is responsible with the Principal of the College almost exclusively for the internal organisation and courses of study, and all matters that have to do with discipline and questions of that kind. I forgot to mention just now that the University of Oxford also nominates a Member of the Council.

3821. Does the Council meet frequently?—Once a month during session.

3822. And the Academic Board?—Once a month also.

3823. Who deals with the finance of the Institution?—The Council exclusively.

3824. There is an Oxford and Reading Joint Committee besides?—Yes.

3825. What are the functions of that Committee?—The functions of the Joint Committee are exclusively to provide for the examination (and the award of the diplomas) of students who enter the College for the diplomas in Agriculture, Horticulture and Dairying.

3826. The Oxford and Reading Joint Committee deals with the educational part?—It deals with that part of the educational work of the College—simply with the agricultural and horticultural examinations.

3827. As you have mentioned there is a Joint Committee for the management of the British Dairy Institute?—Yes.

3828. That is representative of the Dairy Farmers' Association and of the College?—Yes.

3829. That deals exclusively with dairying?—That deals with the management of the Dairy Institute; it is their executive body.

3830. Then in addition there are representative

trustees?—Those have no concern with the government of the College.

3831. They only deal with the finance?—I think what you are referring to, my lord, are trustees appointed by the Council—at least I imagine so—you will see it on page 43 of the calendar; they have nothing to do with the College; they are nominated by the Council to deal with charities outside which have nothing to do with us.

3832. They are merely an outside body?—They are merely nominees.

3833. Now, with regard to the courses of study, perhaps you will give us some information on that point?—I have circulated a paper marked C. From that paper it will be gathered that the courses of study as distinct from local lectures, are of two kinds: there are the diploma courses upon which the Oxford and Reading Joint Committee examines and awards the diploma. Those courses extend in every case over two years, and where the student wishes to get the diploma with distinction, then over a third year. As distinct from those there are certificate courses, in which the certificate is granted by the Academic Board of the College, and in regard to those certificate courses the duration is one year, or in the case of the agricultural certificate, a six months winter course. I think that is all I have to say on that apart from what is on the sheet.

3834. A six months' course and a one year course?—In regard to the certificate, yes. The certificate in horticulture, I think, lasts one year; the certificate in agriculture lasts over the six months in winter—the two winter terms.

3835. Does a University give any degree to your students?—We have, as a matter of fact, in the College now one student who is seeking the B.Sc. degree in Agriculture of the University of London.

3836. There is no Bachelor of Science degree in Agriculture of the University of Oxford?—No.

3837. Then there is the diploma in dairying at the end of the two years' course?—Yes.

3838. That is given in connection with the Dairy Institute?—Yes.

3839. And a certificate in dairying at the end of one year's course?—Yes.

3840. Then the certificate in Agriculture?—That is at the end of six months in the same way.

3841. Then you have three months' practical training on a poultry farm?—Yes.

3842. That poultry farm is situated five miles out of Reading?—Yes, at Theale, on the Great Western.

3843. That was started by Mr. Edward Brown?—Yes, I think he initiated it.

3844. Is there any chance of that farm being taken over by the College?—Do you mean being bought by the College?

3845. Yes.—I do not think the Council are likely to buy it, because they have no inducement to buy it. They obtain all the use of it under the present conditions which they desire.

3846. Do you pay any rent for it?—I would rather the Registrar were asked as to the finance of the poultry farm—it is somewhat intricate.

3847. Very well. Are the diplomas and the certificates chiefly given to sons of farmers?—I have some information about that which I was preparing to go on with under the heading "type of student attending the Institution."

3848. Then perhaps you will give us that later. Have you any further information with regard to the courses of study?—I have nothing further to say with regard to that.

3849. Then the number of students who have come for instruction?—I have circulated two sheets, D and E. D gives the number of students actually in the College in the present session apart from the students who are there for quite short periods. I have not included those. The students on this list, amounting to 60 altogether are there for one, two or three years, or as a minimum about nine of them would be there for six months, the agricultural certificate course. That is on Schedule D. That is followed by Schedule E, which gives the number of students, the gross totals, who have pursued courses in these various subjects that are there named in the last ten years. In regard to your

Mr. W. M.
Childs.
15 May, 1907

3849a question respecting the type of student attending the College I would like to say in the first instance that the type is so varied that it is somewhat difficult to distinguish one element as against another. These students come to us at Reading from all over the world. Of course the majority are from this country, but we have a certain number from the Colonies, and we have also a contingent from foreign countries. I should say that in our ten years' existence there is hardly one European country that has not sent us a student or students, but no doubt predominantly most of these students, or rather the parents of most of these students, are connected with land in this country. I see for instance that in 1904-5, out of 19 students taking diploma courses, nine of them were farmers' sons, and two were the sons of land-owners as distinct from tenant farmers. Then I have certain particulars which I was asked to give as to the after history of the students. These materials I should like to say are not as complete as we should like to make them, or as we could make them, but the notice was not long enough to enable us to treat the point quite fully. Most of these students become either teachers or farmers or gardeners. I would like to submit to you the results of 16 returns under this head in Agriculture that have come in within the last few days. Nine of these returns relate to diploma students and nine to the agricultural certificate students, the winter course. They are taken at random. With regard to the nine diploma students, one is assistant lecturer in agriculture to the Hereford County Council; another has just taken a farm; then there are two brothers who will be referred to by Mr. Martin Sutton later, one of whom is farming 800 acres on his own account, and the other assisting in the management of a very large farm in Hampshire; another is assisting in the management of his father's farm; another has for three years been farming on his own account; another is the Science Master in a grammar school—he has been diverted from agriculture—another is Agricultural Instructor in a grammar school, and helping to teach agriculture in the villages under the County Council, and another had charge of Sir Walter Palmer's two farms at Ascot, and is now Agricultural Lecturer under the Bucks County Council. The last, after being Lecturer in Agriculture for the Dorset County Council, has lately been appointed an Agricultural Lecturer under the Egyptian Government. Those are returns which relate to nine diploma students which have been chosen quite at random. Then I take returns relating to seven students who went through the six months' course for farmers' sons, and who obtained certificates. Of these, one is in an estate office on Lord Carnarvon's estates; another is solely responsible for his father's farm of 300 acres; another is the Staff Lecturer on Dairying and Poultry-keeping to the Hampshire County Council; another is assisting a farmer in the management of a farm; another is working on his father's farm of 1,400 acres, and the last, who is a woman, is giving assistance in a dairy farm and occasionally lecturing on agricultural subjects. All those particulars I hope may be taken as a fair sample of what is the after career of an agricultural student. Then I have some other particulars with regard to horticulture, particulars relating to 26 students, whom I can group in various categories. These students have all been through the College since 1902. Of market gardeners and nurserymen there are five; managers of market gardens, two; assistant manager on a fruit farm in South Africa, one; one engaged in his parent's business as a nurseryman at Shrewsbury; two Germans who have gone back to Germany to take part in a great seed business which belongs to their parents respectively; another assistant at a seed testing station at Grange-over-Sands; another who is hybridist to a leading firm at Surbiton; another who is manager of his own farm in Norfolk; another who is managing a dairy farm in Hampshire; another who is manager of his own farm in Hertfordshire; while four are giving assistance in the teaching and management of the College fruit station and of the College gardens, and six (which completes the 26) are gardening in private establishments. Lastly, 3849c I have particulars with regard to what happens to those who go through the courses in poultry keeping. I think the Committee have before them the prospectus on poultry keeping, and if you turn to pages 20 to 26 of that prospectus you will see the after careers of a very large number of students who have been through those poultry courses. Broadly speaking, I find on going through that list, that in the last 10 years, upwards of 60 students have obtained posts as lecturers or instructors, chiefly under County Councils, and it also appears, and the fact deserves note, that our students who have been

through the courses at College poultry farm at Theale, have a practical monopoly of the County Council posts connected with that subject throughout Ireland. I understand that in every County in Ireland, except two, the teacher of this branch of agriculture, of poultry keeping, is a person who has been trained at the poultry farm at Theale. I think that completes my evidence under that heading.

3850. As regards the staff of the Institution, what have you to tell us?—That comes in with what I was proposing to say a little later. The point I had down next was the sphere of influence of the College for agricultural purposes. Shall I deal with that now?

3851. Very well.—As I have said, the students come to the College from all over the country, and from other countries; but on the other hand, Reading lies in the centre of a very important agricultural district, a fact which has a real bearing upon our work. I might define this district roughly in reference to those counties or county authorities which either make financial grants to the College or maintain official connection with it in some form or other. Those counties are Berkshire, Buckinghamshire, Oxfordshire, Hants and Dorset. In some form or other the College has official relations with all those county authorities, and I may point out that that area contains over three million acres, mostly agricultural land, and a population of over 8,500 farmers. I might, perhaps, distinguish between those counties. Berkshire, Buckinghamshire and Oxfordshire make us a direct financial contribution. Buckinghamshire and Dorset appoint their own lecturers in agriculture on this understanding, that the College Authorities recommend to them whom they should appoint, and we do what we can to keep in touch with the agricultural lecturers so appointed. That applies to Buckinghamshire and Dorset. Again, Hants and Berkshire accord representation to the College on their Education Committees. Hampshire, again, although it does not give us a grant, invites the College to inspect the Basing Farm School. In addition it has founded scholarships that are tenable at the College and have been in operation now for a number of years. I should like, informally, to acquaint the Committee with the reality of this connection even with a County which does not give us a grant. For example, yesterday afternoon the Manager of the Basing Farm School came to Reading for the following purpose: the Board of Agriculture has given to the Hampshire County Council a grant of £100 a year in aid of the Basing Farm School, and the Manager of the Farm, came to see Mr. Percival, who is our Agricultural Director, in order to obtain from him advice as to how best to expend that £100 or part of it in a scheme of agricultural experiments. I point out that Hampshire does not make the College a grant. Perhaps we think it ought to do, but that is the kind of way in which an outlying County is in the habit of consulting the agricultural staff of the College. Of course, where a County Council gives a financial grant, the Council of the College offers certain advantages, for instance, in the reduction of fees. If a Berkshire student, for example, wishes to take the Agriculture Diploma Course, he gets a reduction of 25 per cent. on the fee. Then again, as Mr. Percival will explain, we have a system by which the farmers or gardeners of the County can send to the College for information on any point which they think we can advise them about, or send specimens of manures or milk for analysis. Mr. Percival will deal with that. Then we also give occasional lectures at village or county town centres. We feel in fact that the future of agricultural instruction at the College at Reading depends not a little upon the support that is to be obtained from the County Councils. We think that that is capable of a good deal of development, and in connection with that I have ventured to transcribe the paper marked F, which is an extract from Mr. Michael Sadler's report to the Hampshire County Council on their Secondary and Higher Education. It is not necessary that I should read it. The point of it is to call the attention of the Hampshire County Council to the fact that seven miles from their border they have an agricultural institution that is capable of giving them service if it is properly supported.

3852. I see that Mr. Sadler is of opinion that the scholarships which are now given to some of the students from Basing Farm School should not simply be given for the winter course, but that they should be given for the full diploma course?—Yes; we feel that very strongly, that where there is a good student who has been through the course at the Farm School

Mr. W. M.
 Childs.
 15 May, 1907.

3852a it is very desirable that he should be given the chance of taking the longer course at Reading. I think one or two of them have done that, but the number has not been so large as we think it should be. My last point was to deal with the policy of the College in respect of agricultural and horticultural education, and the financial considerations connected therewith, which brings in that question of the staff to which reference was made just now. I should like to say in the first place that the Council of the College have always recognised their special responsibility, and their special opportunity in this agricultural direction. They have always felt the force of the general argument that I have tried to state that Reading is in the heart of a great agricultural region. The proof of that recognition on their part I think is found on Table G, which shows that having regard to capital expenditure alone the Council have devoted to agricultural and horticultural work a sum in the last 12 years of very nearly £20,000. That of course is quite apart from what one would not bring under that head, the provision of scientific laboratories and general college buildings which are absolutely essential to the carrying on of agricultural teaching in such a place. In the second place I think I ought to say that the Council could not carry on this work at all on the basis of fees and of the existing grant. The Registrar who is to deal with any financial point required afterwards will submit a table which will show the actual deficits on annual working that have had to be faced from year to year by the Council. Agricultural education in Reading simply could not have been carried on in the way and to the extent which has been the case unless a number of gentlemen in the neighbourhood, one of whom is to follow me, had been willing to give it most liberal support. In any case the council have experienced a great deal of difficulty and a great deal of anxiety on this point of finance in the maintenance of the work. I should like to point out in that connection that although the existing grant of £800 which we get from the Board of Agriculture was undoubtedly a liberal grant some years ago, it is not commensurate with the amount of work and the amount of financial burden that now has to be undertaken. May I give one or two points in support of that? In the first place I would say that in the last ten years the stipend remuneration of those who teach in these departments has markedly increased. I do not know that I should say how much it has increased, but it is a matter of common experience that men engaged in this teaching command higher stipends than they used to do. I might incidentally say that I think that is the case in most other subjects also, but it certainly is the case in that subject, and the consequence is we are in a difficulty which I have no doubt is shared by other institutions of the same order in not being able to devote enough money to the remuneration of the assistant lecturers in these departments. The work at Reading would be very much better we feel, very much stronger at any rate, if we had a rather larger staff of men, if they were less absorbed, some of them, in the mere routine of teaching—their time is so closely occupied that some of those special enquiries which Mr. Percival will speak about, and researches, are very difficult under present conditions—but my point is, that notwithstanding the growth of the work, and notwithstanding the growth of liability with regard to stipends, the grant from the Board of Agriculture has remained absolutely stationary for 11 years, and that no doubt is one of the causes of our financial anxiety. Then in the second place I only state a matter I think of common experience, and it is that the grants in aid, from the County Councils, are increasingly difficult to obtain. That is always attributed, and as a member of two County Committees, I think I can say, with truth, to the fact that the Act of 1902 has compelled County Councils to devote an enormous amount of money to merely elementary work in the elementary schools and to the training of teachers. I notice that in the Board of Agriculture Report for 1906 it is pointed out that in 1903-4 the County Councils of England and Wales gave £32,146 in grants to Colleges and schools on behalf of agricultural education; in 1905-6, only two years later, the amount, had actually fallen to £26,880. That I think is one proof of my contention that as things are, and apparently as things are going to remain for some time to come, it is very difficult for a College like ours to be able to rely on getting a larger and larger measure of support from the neighbouring County Councils. My last point is one which I will state in the briefest way, but one which the Council feel to be most important, and it is that our development of horticulture is a development which was called for by the

demand for the teaching and a development which judged by the number of students who take these horticultural courses has been entirely justified. I might mention that when Lord Onslow went round the gardens in 1904 he made the observation that as far as he could see, nowhere in England was horticulture being better taught than at Reading, and an observation very similar was made, and in some ways even more decisive from a scientific point of view, by Mr. Haldane in October, when he went round the gardens and opened our new buildings. It was largely because of this recognition of the importance of their work, and of the emphatic recommendation of it that was made by Lord Onslow, that the Council petitioned the Board of Agriculture a year or two ago that this special work of theirs in horticulture, this development of the general agricultural work, might perhaps entitle them to an increased grant. The grant was refused, and I can convey with great difficulty the extreme disappointment of the members at Reading, some of whom have devoted not only a great deal of money but a great deal of care to the development of this work. The result of that has been to check to some extent the development of horticultural teaching. Twelve months ago the Council were obliged to resolve that, having regard to the fact that no grant was to be forthcoming for this work—it was not only a question of money, but a question also of official recognition—that the expenditure on horticulture must be restricted as closely as possible. I think the whole of our feeling—I speak now from the point of view of the Council and not as an agriculturist, which I am not—is that the work has grown, that it is growing, and that there are hardly any limits to its growth, provided that the grave embarrassment of making both ends meet is somewhat lightened. I think, my lord, those are all the points that I was called upon to deal with directly; but I shall be delighted to answer any questions if I am able to do so.

3853. You wish to add to the numbers of the staff, and you also think that the salaries which are given ought to be increased?—Yes.

3854. For that purpose you think larger grants should be given by the Board of Agriculture?—Yes, that is our opinion.

3855. You conduct lectures in the counties, do not you?—The College does.

3856. Are these lectures well attended?—Mr. Percival can tell you more exactly about that. I think the results vary a good deal from what I have heard. I have also heard—I speak as an outsider on this subject—that the value of a lecture does not always depend on the number of people who attend it—that some of the most useful of these occasional lectures may be attended by only half-a-dozen people.

3857. You also conduct agricultural experiments at various centres?—Yes.

3858. Are they watched by the farmers with interest?—That, I think, comes under Mr. Percival's evidence. They are watched with interest, but he has the details on that subject.

3859. How many of your students are resident, and how many are in independent lodgings?—How many of the agricultural students?

3860. Yes, perhaps you can give us the average?—I have not the exact number here, but I gave a return which showed that there were 60 horticultural and agricultural students. I think that I am quite safe in saying that more than 40 would be students whose homes are at a distance, if that meets the point.

3861. They would not be resident?—We use the word resident in another sense. They are non-resident in the sense that they have to live either in a hostel or in lodgings.

3862. Those who live in hostels you consider non-residents?—Yes; we speak of them as non-residents. Their permanent homes are not in the town.

3863. Then the women students are chiefly in the dairy, I suppose?—No, I should not say that they are chiefly. I gave particulars of the number of women students on page D. There are, for instance, 16 women doing agriculture and horticulture apart from dairying. I should say most of the women agricultural students who live in hostels are not doing dairying. I think I should be right in saying that.

3864. What are they doing?—Horticulture in most cases.

3865. There are more women students in the horticultural department than in the dairying department?—Yes, in horticulture and pure agriculture, there would be.

3866. What is the attitude of the farmers towards the institution?—That comes into Mr. Martin Sutton's evidence; he is to deal with that point.

3867. What is your experience with regard to the degree of preparation which your students have received before they enter the college?—That varies very greatly; it varies so much as to make it difficult to answer that question. Sometimes a student will come having had a very good school education; frequently that will be the case. For instance, we admit a certain number of lads who have been to public schools. On the other hand, no doubt, it is very often the case with the sons of tenant farmers that their education has not been very satisfactory.

3868. Are you in favour of the education which they obtain before they come to the College being of a general character?—Certainly, for the diploma students I think that should be the case as a general rule.

3869. You are not in favour of giving them a special agricultural secondary education?—I am not in favour of it in principle. The principle applies to other things besides agriculture, but I do not deny that some of the best students, I believe Mr. Percival will say, have been those who have done well at a farm school, such as Basing; I think that is sometimes the case.

3870. The Basing School is a school of practical agriculture?—Yes.

3871. Is elementary science given as well?—I think they do, but I am not quite sure on that point—Mr. Percival has just informed me they do do so, but it would be very elementary.

3872. Do you think that for students who cannot attend the College, whose education ceases at 16, institutions like the Basing Farm School are the type of institution which should be encouraged?—If their education is to stop at 16?

3873. 16 or 17.—I have very little experience of that matter. I hear about the Farm School a great deal on the Hampshire Committee, and my general answer would be that if the education is to stop at 16, I have no doubt a good deal that is very valuable could be taught in the preceding two years, and that experience would bear that out, but I have not had the experience personally before me.

3874. (*By Lord Barnard.*) I do not think you have told the Committee what is the governing instrument of the College. Is it a Royal Charter or what?—No, it is not a Charter—Articles of Incorporation.

3875. A limited liability company, in other words?—Yes, without profits. We are not a chartered institution.

3876. Have you ever contemplated it, and do you think there would be any advantage in getting a charter?—We are always so much troubled with the extent of our growth that we do not know exactly in what way we may have to extend.

3877. Have you any endowments?—We had an endowment in 1905. Mr. George William Palmer gave us an endowment of £50,000.

3878. How is that endowment invested?—In various securities. I have not the particulars here.

3879. Perhaps I had better ask Mr. Wright that?—Yes.

3880. Is there a Trust Deed?—Yes; there is a Trust Deed.

3881. I forget whether you told the Committee the usual age at which students come to you?—They may not enter the College under 16, but those who come to us are generally older than that. I have not estimated the average age lately, but I should think it would be over 18.

3882. Do the students who come to you have to go through any entrance examination or any other test as to their fitness?—They have not usually an examination of a formal kind. Our experience has been this: we used to have, and we still have if we need it, a written examination of a simple kind. It is referred to in the prospectuses and in the calendar, but we generally find that the student has already passed an examination which satisfies us that he is of sufficient intelligence to go on with the course of study, and sometimes we are satisfied on

the result of an interview, and by questioning a student and finding out what his record has been. We then are able to form an opinion as to whether or not he is able to undertake the course of study.

3883. You do not admit students indiscriminately?—No.

3884. Do you find that the method you adopt is a satisfactory method?—I think it is satisfactory in the stage at which our Institution has arrived. We are only 15 years old at present. Of course the time may come when we may exclude a little more severely.

3885. You told us that you think it is an advantage that a student who has been undergoing a course of instruction at a special farm school should have an opportunity of further continuing that instruction if he shows himself capable of it?—Yes.

3886. I do not think you mentioned the subject of ordinary secondary schools which are provided, as sometimes is the case, with agricultural departments or special classes in agriculture. Do you think that agricultural departments or special classes in agriculture, in an ordinary secondary school, are of any value?—I do not think I have ever had to do with a secondary school which had one. I should be inclined to be sceptical about it.

3887. Should I be correct in saying that in your opinion, in the case of a boy who has been at an ordinary secondary school, it would be better that he should simply go through the ordinary course and have no special instruction before he comes to you?—I should think on general lines it would. I do not see how they could do it in the practical way that would be requisite.

3888. Who actually have the appointment of the teachers?—The Council.

3889. What is the meaning on page 51 of your Calendar of Associates of Agriculture?—On page 52 will be found the explanation, I think. Those who have obtained diplomas in Letters, Science, Agriculture, Horticulture, Fine Art, or Commerce, are entitled to rank as Associates.

3890. Entitled under your Articles of Association, I suppose?—I do not think it is mentioned in the Articles of Association. The Academic Board has power to do that.

3891. It is a sort of quasi degree—a hall-mark as it were?—It is.

3892. What is your connection with the University of Oxford?—Apart from the circumstances of our foundation, which is not official, we are an affiliated College. That is explained in this Calendar on page 86.

3893. It is not merely an *entente cordiale*; it is a legal *nexus*?—Yes. A student who has done a certain course of work with us may go to the University of Oxford and get a degree on two years' residence there instead of three, but it has never been practised.

3894. Do you value your association with the University of Oxford?—Very greatly.

3895. You think it is of use?—Certainly. I do not think it is reducible into terms of cash.

3896. Quite so, I understand what you mean; I did not mean that. Do the staff of the Agricultural Department all reside in and about the College?—No one lives in the College; they live in the town.

3897. They are always on hand?—Yes.

3898. They give their whole time I suppose?—Yes.

3899. The object which the College has before it is to give a higher instruction in agriculture to all British subjects with special advantages, of course, to those who come from the counties?—Yes.

3900. Do you think it is an advantage that the College should be open to the whole British Dominions?—Undoubtedly.

3901. In the case of foreigners, they get those advantages too when they come?—They do.

3902. Do they pay any extra fees?—No, they pay no extra fee.

3903. They pay the same as a man who came from the North of England would pay, I suppose?—Yes, I should be very sorry to exclude the foreigners. I think they are a very useful element.

3904. You consider in the same way as Englishmen go to foreign schools that that is a mutual advantage

Mr. W. M.
Childs.

15 May, 1907.

Mr. W. M.
Childs.
15 May. 1907.

which ought not to be curtailed?—Yes, and there is this advantage at Reading, that there is a very varied and vigorous corporate life, and it has that energy largely because it is made up of many different elements. So I should be sorry to exclude the foreigner.

3905. One word as to the general principle of finance. You told us there was an increasing difficulty in obtaining support from the County Councils and you consider that you are entitled to look to the Government for some additional financial support?—Yes.

3906. Would you agree with me in the opinion that any such additional financial assistance from the Government should be conditional upon no reduction certainly in the support from the Local Authorities—you see my point?—Yes, I quite see your point, and I am familiar with the argument which applies to the Treasury money also, but I am bound to say that I think any very hard and fast rule of that kind at this stage in national education might be very adverse to the institution. The County Councils in our part of the world are extremely pressed for money. It is not a matter of goodwill or lack of goodwill.

3907. That I can quite understand, but there would be a risk would there not?—I agree.

3908. Of the Council saying "You have further help from the Government so you can do with less"?—May I say I think the Treasury do say that the amount of local contributions must be so much—not necessarily from County Councils. I am not quite sure that the County Councils would enjoy being—may I say—intimidated.

3909. You have been particularly fortunate in Reading in having had generous benefactors?—Yes.

3910. I do not know whether you are sufficiently acquainted with the agricultural community at large to agree with me that, as a rule, you cannot expect very large endowments or subscriptions from agriculturists?—I quite agree.

3911. The only source then would be the Government?—Yes.

3912. I understood you to say that all the contributing bodies were represented on your council?—Yes; that is shown on page 40 of the Calendar.

3913. I presume you would not object to having a direct representative of the Board of Agriculture on the Council?—No, I think he would be very heartily welcomed.

3914. The Trustees are really nothing whatever to do with your institution. It is a power which you have of appointing trustees or managers of other bodies, and that is in itself an advantage, and it is always found to

be, because it keeps you in touch with those other bodies?—Yes, that is the point.

3915. (*By Lord Belper.*) I only want to ask you one or two questions about the financial side of the matter. I see from the Income and Expenditure Account for last year there was an expenditure on the College of nearly £20,000?—Yes.

3916. That, I suppose, covers the expenditure on the whole of the work of the College?—Yes, the whole of it.

3917. A great part of that I suppose is for the scientific instruction?—Yes, there is science and apart from agriculture and horticulture there is fine art, music, commerce, and a great range of evening classes.

3918. I see the Treasury grant is over £4,000. I suppose none of that goes to agriculture?—I do not think that would be correct at all. In the first place, may I observe that it is not really over £4,000, although it might seem so from that statement. The annual grant hitherto had been £3,400; the £825 which you see below was a special grant which varies from year to year, and may not go on, for apparatus and books.

3919. I did not assume it was annual, but in that year you received, as a matter of fact, nearly £4,300?—Yes; and agriculture does undoubtedly receive benefit from that, because in the first place to take the smaller grant first, the books and scientific apparatus purchased with that money would be available for the use of the whole college.

3920. I am bound to say, in the way your accounts are presented, I am a little at a loss, because in the first place, I see you have got in the schedule marked "M," "University College, Reading, Accounts and Report of the Council for the year ended September 30th, 1906." Then you have a head for the College Farm, Shinfield, and then a head for the Department of Horticulture, but there is no head for the Department of Agriculture. I see there is a sheet marked "J" further back, which purports to give a statement of the accounts of the agricultural department?—This really concerns the Registrar more than me, but I think I am right in saying "J" is the sheet which is returned annually to the Board of Agriculture.

3921. I was rather sorry that you have not been able to give us an account of your expenditure and income on agriculture in the same way as you have done with regard to the College Farm and Horticulture. It seems rather an important omission?—Mr. Wright is perfectly prepared to answer that question. I could answer it, but I might make a mistake or two if I did.

3922. Might I just ask that question of Mr. Wright now?—Certainly.

Mr. FRANCIS H. WRIGHT, Registrar of the University College, Reading, called and examined.

Mr. F. H.
Wright.

3923. (*By the Chairman.*) Will you kindly give the answer to that question to Lord Belper now, Mr. Wright?—The answer to that is that the Board of Agriculture require us to present an account each year for a financial year ending on the 31st March. Those accounts are sent up annually to the Board. I have not presented a copy of that account, but that could be handed in as supplementary to the evidence if that is wished.

3924. (*By Lord Belper.*) That would give us something, but it would not give us what you have got under the two divided heads, the income and expenditure for the year ending September, 1906, so that we could see how much of this large expenditure goes to agriculture?—The account "J" is an account which I specially prepared yesterday, because I felt it was very desirable that an account should be prepared from the figures in account No. 1 of "M," in order to show something like a fair year's agricultural working. My opinion is that the account rendered annually to the Board of Agriculture is unfair, both to the Board and to the College, for the simple reason that we have always in that account two years overlapping. We are required to make a water-tight compartment for the year ending on March 31st for the Agricultural Department. The College accounts are made up to September 30th in each year.

3925. "J," you consider, gives a fair representation of the income and expenditure on agriculture for the year?—I think for the particular year which I have taken out, "J" deals most fairly with agriculture, and for this reason, that in "J" I have taken the grants from contributing counties at their full amount. In the account I should render to the Board of Agriculture, I should not put those figures in, because if you take Berks, a large sum should be apportioned to general education, and a great deal of work that is not agricultural. The same applies to Oxfordshire, where we do much evening work for residents in Oxfordshire. I have put in the whole of the grants from the contributing counties, £825, and on the other side of that account the expenditure upon agriculture totals up to £2,152; that is the actual expenditure entirely upon agricultural work. You will notice the next paragraph is "Estimated contribution due to the College for services rendered to the Department." In that case, from the statement "K" I tried to get the fair proportion to charge for the services rendered by the scientific staff to agriculture. I might fairly have taken one quarter of the stipends of the scientific staff, who were actually instructing agricultural students, but I have only taken one-eighth, because I wanted to present the most favourable case financially for the Agricultural Department.

3926. You have not credited this account with any part of the £3,400 grant?—That is so; nor the George Palmer endowment.

3927. I suppose your contention would be that it would be almost impossible to give a correct balance sheet showing the actual part of that grant which would go to agriculture and the charges for the work of the general staff which ought to be debited against agriculture?—That is so, but I may add one other point, which is important, that the policy of the Council in this matter has been against the publication of a strict agricultural account, for the reason that it is obvious that the agri-

cultural department is parasitic on the College as a whole, and that the publication of an annual statement of an agricultural account, would probably create some amount of dissatisfaction among the other departments of the college, which are going ahead, as will be seen from the comparative statement of net receipts from fees, on the right-hand page of account "M." For that reason we have not published an agricultural account, pure and simple.

3928. I am very glad I asked you the question, because it was not explained on the face of the account?—That is so.

Mr. F. H.
Wright.
15 May, 1907

Mr. W. M. CHILDS, M.A., recalled and further examined.

3929. (By Mr. Acland.) Would you admit that at present the College does as much work as its extremely excellent equipment in every way would enable it to do?—It does as much work as its staff can do, certainly.

3930. You have as many students at present as you can deal with?—I did not know that it was going to be put quite in that way. I think that we could probably deal with rather more students, but not many more, and we would have to add to the staff very quickly. In horticulture I do not think that we could take more than half a dozen students without having to add to the staff.

3931. If I asked is your chief lack money or students, you would say, money?—Certainly.

3932. You think you have at present a sufficient number of students to justify the expenditure upon them?—Yes, I think so, certainly.

3933. Do you desire to encourage neighbouring localities to send more students?—Yes, I think that one of the things a college like ours at Reading can do, is to give a year or two's advanced instruction and training to the pick of the boys and girls who come from the county secondary schools. I think that is a thing that this new college could do because, if I may be allowed just to mention what is in my mind so strongly, there is a type of promising boy, particularly at local grammar schools, who would be more happy and get more out of life generally at a place like Reading than he would if sent to a great University with inadequate funds. I speak there with some experience.

3934. Do you think, with the development of secondary education, and with the growing knowledge possessed by the farmers of Reading, there is likely to be a larger attendance of boys of that sort?—Yes, I think it will come; I do not think anything can stop it; in Berkshire, for instance, to mention one county only, there is an increasing provision of secondary teaching, but the fruit of that is hardly visible; it is only just coming.

3935. Do you hope that that increased use of the College by the agricultural population of the counties may lead to an increase in the contributions of the counties to your funds?—I think it will in time, certainly.

3936. Can you suggest any special reason why the three counties, Berkshire, Buckinghamshire, and Oxfordshire, so near to you, give such a very small proportion of their "whisky money" to agricultural education?—No, I do not know that I know of a reason for that. I presume you are not inferring that the sum they give to us is the only sum?

3937. No.—No, I do not know any particular reason. I think sometimes there has been a feeling, and sometimes a very active feeling, that a good deal of the money formerly rather lavishly distributed on peripatetic teaching in villages was not spent to much permanent advantage. I think there may be some reaction from that perhaps.

3938. Would you say that the tendency of the counties is to give less to agriculture than it was a few years ago because of pressure from other sides?—I am not in a position to say that from knowledge, but I should think it probably would be so.

3939. Do you think that any expansion of their grant to you would only be very gradual?—Yes, I think that is certainly the case.

3940. Therefore you do not think that any pound for pound method of contributing by the State would be a satisfactory method in your case?—I do not think it

should be done with too great rigidity. I do not think, judging from experience, it would be the smallest use going to a County Council and saying: "Unless you raise our grant we shall not get so and so." If it is put in a hard and fast way like that they might say: "We are very sorry for you"; but, on the other hand, it might be an inducement if it was put in some other way. It is the rigidity which I rather object to.

3941. Can you suggest any development of your work which would make the County Councils more likely to increase their contributions?—I do not think that is the difficulty. I think each year certainly the number of county boys and girls who get this instruction will increase, and that will convince them in time. I have no doubt about that whatever, but it may take time.

3942. You simply say they contribute very little because they have got very little to contribute?—I do.

3943. You cannot suggest any cure for that?—No, I do not think I can. The County Councils, as was pointed out the other day at a meeting of the Berkshire Education Committee, have very little choice; they have to spend their money on elementary education, whether they like it or not; they must do it; all the funds are earmarked for certain purposes.

3944. When your College is compared with other colleges, such as the College at Leeds, the County Councils contribute very little to you?—Are not the three Ridings of Yorkshire very much better off than the County of Berkshire?

3945. No, I think not, speaking as a North Riding Member of Parliament?—As Berkshire has been referred to, of course it must be remembered also that when the Berkshire Education Committee began its work it found an extraordinarily inadequate provision of secondary education throughout the county, and they have not yet finished their labours or expenditure in meeting that deficiency.

3946. You think the spirit is willing on the part of the counties to contribute to you?—I do.

3947. Do you think if they had increased grants from the State for secondary education money would be free to help your college?—I have not the smallest doubt of it.

3948. (By Mr. Staveley-Hill.) Do you do anything in the way of instructing teachers in elementary schools?—Yes, we have a day training college.

3949. In these lectures that were given in various centres, were they ever given to labourers?—I do not think they were given to labourers as far as I know. Do you mean the centres in the counties?

3950. Yes?—I should think that is probable, but I never gave any myself.

3951. You spoke earlier in your evidence, I think in the statement you made, of one of your late pupils having become a teacher in a grammar school. Is that a teacher of agriculture?—No; I think it was a teacher of science, but one has become a teacher of agriculture in a grammar school—one a teacher of science, and one a teacher of agriculture.

3952. Are there many grammar schools in your neighbourhood where agriculture is taught, and where there are such teachers?—No, I do not think there are.

3953. Would you consider it of great value if there

Mr. W. M.
Childs.

Mr. W. M.
Childs.

15 May, 1907.

were such instruction given?—No, I should not think it is much good in an ordinary grammar school.

3954a

3954. Not if taught by a properly-qualified teacher?—It depends so much upon what is meant by agriculture. If it is really very efficient nature-study teaching, I should think it would be very useful, but if it is more ambitious, and pretends to be agriculture and it is not, it might be rather mischievous. You asked me a question at the beginning that I should like to refer to—as to elementary teachers. I thought you were going to ask me whether the college had any course for specially equipping a teacher who was destined to go into a rural school. One of my colleagues, Dr. Keeble, will deal with that point particularly. But I should like to say that we do feel that we are just one of the places where a student intending to become an elementary teacher might get a thorough course, if encouragement were given to enable him to become a competent teacher in a village school. But at present, under the Board of Education regulations, practically nothing of that kind is done. I thought you were going to ask me about that.

3955. (By Lord Moreton.) Would you mind telling me whether the foreign students you referred to once or twice come to Reading especially to study agriculture or horticulture?—Both; and dairy work too. I should say probably more have gone into the dairy than anywhere else.

3956. You were asked several questions just now as regards the financial help supplied by the neighbouring counties and local bodies?—Yes.

3957. Do you think that the happy circumstances under which you have been situated at Reading, and by having very good friends who have been able to help you financially, has rather made outside bodies think that they need not trouble so much as they might otherwise have been expected to do?—No. I do not think it has that effect at all; on the contrary, I think it has been proved again and again, that as soon as an institution develops power and obtains a basis of endowment so that there is a guarantee that it will go on, the local authorities are disposed to think more favourably about it.

3958. (By Mr. Medd.) Some of the Treasury grant, I think you told us, goes to assist the Agricultural Department?—The Agricultural Department derives benefit from it.

3959. If not directly, indirectly?—Yes.

3960. It relieves financial pressure?—Undoubtedly.

3961. So that you are in fact in the agricultural department receiving aid from two State Departments?—Well, I think it is rather hard to put it that way.

3962. But it is so in effect?—Undoubtedly it is so in effect.

3963. I am very glad to hear that you are so aided?—My point would be there that inasmuch as the agricultural and horticultural departments have to make use of the scientific staff, whatever strengthens the scientific staff must be an advantage to the agricultural and horticultural departments; that is my point.

3964. In other words, if you had not, so to say, access to the Treasury grant, you would require further financial aid from other sources?—The College would not be so efficient.

3965. I suppose no portion of the Board of Education grant goes to the agricultural department—or could you say that that indirectly helps it?—Might I ask what grant you refer to?

3966. It is on your return M. in Income—"Board of Education grant"?—No, that does not go to agriculture in the least degree.

3967. With regard to the £800 grant from the Board of Agriculture, is that in any way earmarked when it comes to you?—Yes, it must be devoted to the purposes indicated—for buying books and apparatus, and you have to submit before you get it a list of the purposes to which you propose to devote it.

3968. I am referring to the £800 grant from the Board of Agriculture. You are taking the Treasury grant?—Yes, I am very sorry—I do not know that that is earmarked.

3969. You get it *en bloc* and you appropriate it as you think best?—Yes.

3970. You have to render an account as to how you

spend it, but it comes to you with free hands?—That is so.

3971. Can you give me any idea, roughly, of the amount that goes to the support of the horticultural department out of that £800?—I am not sure that I can; I do not think we have ever assigned a specific portion of it.

3972. There again the horticultural department would to an appreciable extent be benefited out of that?—Yes. You see to have done that, if I may be allowed to point it out, would have meant in the year 1902 deducting something from agriculture for the benefit of horticulture and that is not a process that one can very well do. There is no differentiation on this point between agriculture and horticulture.

3973. I noticed you said you had applied specifically for a horticultural grant?—It is only a question of form I think; we applied for an increase of our grant, because of the increase of our horticultural work.

3974. Obviously the horticultural department must be benefited to some extent by the £800 from the Board of Agriculture?—Certainly it is.

3975. In regard to the expenditure of money by these affiliated counties for the benefit of agriculture, do you not think that if your connection were somewhat more close with them that their contributions might be raised. I see for instance that Hampshire spends almost half its "whisky money" upon agriculture. That presents a very striking contrast to Berkshire, Buckinghamshire, Oxfordshire and Dorset?—Yes.

3976. As a matter of fact your connection to-day in agricultural education with those counties is very slight?—Very, except in the case of Hampshire where there is a more direct relationship.

3977. Do not you think you could establish a very much closer connection?—In what way?

3978. By acting actually as the collegiate centre for the whole agricultural education of that area—you are so in name to day?—That is what we wish to be, if I rightly understand your use of the term.

3979. Do not you think that you might, by consultation with the agricultural committees or local authorities of those respective counties annually, devise a scheme to cover the whole agricultural education of each county from the elementary school upwards?—I do not think that that would be impossible at all, but I am strongly of opinion that to launch an idea like that, which is a very large idea, successfully, it ought to be done from the central authority in London.

3980. I hope it may be of course. At present you see although these counties are upon paper affiliated to you they are actually in all their agricultural education work really working in isolation, and only coming to you occasionally for advice?—Yes, it is so.

3981. I think you would agree with me that if you could annually meet and devise a scheme appropriate to the needs of each area under your auspices and advice, it would tend to fill up gaps, prevent waste, and also prevent many useless experiments being carried out?—Yes. I think that would be the case. I hope it would not mean that excessive demands would be made on the regular college staff to go on excursions through the counties lecturing, and so on.

3982. No, I think that would have to be left, at any rate for the present, in abeyance, because your staff are fully occupied, but if the scheme I have in mind were carried out, it would tend to an increase in your staff, and your staff would be only partly utilised. May I take it that your view of the agricultural connection that you have with these areas is merely in so far as they provide pupils for you and you give advice on agricultural matters when asked?—Those are the two main things.

3983. The result is that in those areas, with the exception of Basing, there is practically no provision made after the elementary school in which a pupil can be prepared and qualified to come on to you?—Yes.

3984. In intermediate education there is practically nothing in agriculture?—I think that is so.

3985.—You were going to explain to me the more direct relationship of the county of Hampshire with you?—It is only a small point. I am on the Education Committee of Hampshire, and Mr. Percival is on the Advisory Agricultural Board—I think they call it—so

they have recognised that need, although they do not subsidise the college.

3986. They have their own institut^e at Basing, and that absorbs £1,900 a year?—I was going to say in reply to your argument that the first difficulty would be this: that those who have nurtured the agricultural school at Basing into prosperity would not be pleased to deduct any of their money to send to someone else.

3987. It would come in in a well thought-out scheme, and Basing would still retain its position and character. Then in regard to the winter courses, you have very few students—the six months' winter course?—Yes.

3988. How is that, do you know—there are only six or seven I think?—There are from six and seven to 14; it varies each year.

3989. It is intended for the sons of working farmers, I suppose?—Yes.

3990. Has the number of students tended to increase of late, or not?—Generally, do you mean?

3991. Yes, there are 60 altogether?—Yes, it has tended to increase very much, especially in the last five years—the increase has been marked during that period.

3992. From 1895 to 1902 you had a nature study course?—Yes.

3993. Why have you dropped that?—Because the County Council of Bucks—to which I think you are referring—

3994. Yes.—Withdrew the money which enabled the teachers to attend it. I think I am right in saying they did not withdraw the money from us but from the teachers who had previously received the money.

3995. In your answer to Mr. Staveley-Hill you referred to the ordinary day training college, of course?—Yes.

3996. You do not provide any course of study for acting teachers at present in nature study or agricultural teaching?—No, I do not think we do.

3997. Do you not think it might be well to institute a course for them such as they have at Wye?—Yes, I think so certainly, if there is any demand for it.

3998. You referred to a desire to introduce a special course for teachers?—Yes.

3999. Perhaps you are not aware that the Board of Education will recognise such a course, and will provide scholarships for a third year's training at such an institution as yours, if they are applied to?—I am not aware of it; and I think, if that is so, that it is singular that such an Institution as ours should never have been approached about it.

4000. There never has been an application anywhere in England, but might I suggest, since you are prepared to do it, that you should submit a scheme at once to the Board of Education?—My answer to that is that a single institution cannot deal with a point of that kind.

4001. Two institutions are already submitting them?—Have they gained their end?

4002. Yes, one has, and the other will succeed?—That would encourage one to persevere. I have had much to do with the courses for the training of teachers, and the difficulties connected with any departure from the beaten track are enormous.

4003. The Board of Education are going to make that clear. There are already two courses which will be submitted for approval very shortly, and I should suggest to you that you might submit a scheme?—I am obliged for the suggestion.

4004. (*By Lord Barnard.*) On looking through the calendar here I see you prescribe an academic costume?—Do you mean for the students?

4005. Yes?—All the matriculated students wear cap and gown, certainly.

4006. A cap and gown?—Yes.

4007. (*By the Chairman.*) Are you of opinion that it would be desirable that the University of Oxford should recognise residence at your College at Reading for the Oxford Degrees?—That is a most difficult question to answer, my lord. The proposition was made in 1898, and it was rejected by Convocation.

4008. Do you consider that the external degrees at present given by the University of London are an object for which you can work?—They are at the present time.

4009. How many students have you working for the external degrees of the University of London?—70.

4010. As many as that?—Yes.

4011. Would you not from an educational point of view consider it a great advantage if those external students could be transformed into internal students?—Yes; I believe there is a certain educational advantage.

4012. You are aware that the Wye students are considered as internal students?—Yes, I am aware of that.

4013. And you know how it works?—Yes, generally speaking.

4014. Do not you consider that there is an advantage to Wye in having their students considered as internal students as compared with your students who are external students?—Yes, on that particular point I dare say that may be so.

Mr. MARTIN J. SUTTON called and examined.

4015. (*By the Chairman.*) You are a member of the College Council of the University College, Reading?—I am.

4016. You are prepared to give the Committee your opinion as to the types of work conducted by the institution which are of the most value to agriculturists?—May I say one word before I answer your question?

4017. Certainly.—I was asked by the college authorities to give evidence from the point of view of a resident in the counties of Berks and Oxon for the last 30 years, who realises the needs of the locality and has some personal knowledge of the work of the college. My evidence is, therefore, of a very general and detached character, and I should be greatly obliged if before answering any questions which may be put to me, I may read a few notes that I have hastily put together this morning, covering the various enquiries which have been allocated to me, but perhaps not in sequence exactly corresponding with the heads of enquiry as they have been placed on the paper sent me.

4018. Certainly.—Dividing the work of the institution with which this Committee is concerned into those departments broadly connected with agriculture and horticulture, I should say as regards agriculture, that scientific teaching is the most valuable and most sought after; whereas on the horticulture side it is the practical work which is most in evidence, and perhaps that for which the greatest demand exists at the present

moment. I think I may say this without undervaluing in any degree the excellent practical work done in agriculture or the specially good scientific training provided for the horticultural student. It is evident that practical agricultural teaching is easily obtainable on the ordinary farm, whereas it is difficult to obtain a teaching in practical horticulture, except at some institution like that at Reading; and Reading possesses advantages of a very special kind. This latter fact greatly impressed both Lord Onslow and Mr. Haldane, when they visited the College. In the case of the sons of landowners and large farmers, the full course for the Diploma in Agriculture, covering the syllabus of the National Diploma in Agriculture, and involving at least a two years' attendance, is an admirable preparation for their life-work. The one additional year necessary to obtain the Diploma with distinction may well be afforded by young men who desire to become teachers of agriculture or agents of large landed estates. As a proof of the value of the Diploma course to those who are engaged in agriculture on a large scale, the following passage may be quoted from a letter dated May 11th, 1907, from Mr. George Judd, of Cocum, Barton Stacey, Hants:—

"I am glad of the opportunity to assure you that I have always been well satisfied with the usefulness of the course of teaching which my sons took at Reading University College."

The courses in question taken by Mr. W. V. Judd and

Mr. W. M.
Childs.
15 May, 1907.

Mr. M. J.
Sutton.

4018a

Mr. M. J.
Sutton.

15 May, 1907.

Mr. E. T. Judd were the diploma courses in agriculture.

"They are both doing well as practical farmers. The senior is farming 800 acres on his own account near Andover. The other practically manages my large business of 3,000 acres, while he has just been invited to serve on the Farm School Committee of our County Council Farm. There can be no doubt that the technical and scientific knowledge acquired by them during their pupilage at Reading will be of lasting benefit."

Mr. E. T. Judd writes himself to say that he manages practically all the details of the tillage, harvesting, etc., on his father's farm of 3,000 acres, and generally supervises the management of the cattle, and the flock of a thousand pedigree Hampshire ewes. He states that he considers that the course he took at Reading was a very good one, and that it has been and will continue to be of good service to him as a farmer. In view, however, of the interest now being manifested in the question of rural depopulation, and the need for the provision of educational facilities, not only for the small farmers' sons, but such as will enable the sons of the agricultural labourer to obtain an insight into the importance of the scientific treatment of land, even under the conditions of "petite culture," the Reading College very rightly offers, through its certificate of agriculture and the short six months' winter course involved to obtain it, exactly the opportunity and conditions required by County Councils desiring to help youths by scholarships. While the College naturally prides itself on its Diploma, and very probably would never be satisfied to recommend anything less than a two years' course of scientific and practical agricultural teaching, yet I personally think there is a still greater future for the six months' certificate course, just as in practice it has proved to be the case that the certificate course in dairying (October to July) is more popular than the two years' course in scientific and practical dairying. It would appear to be very desirable that the County Councils, particularly in the neighbourhood of the College, should utilise to the greatest extent this short course for the benefit of a type of student with which they have to deal in large numbers. In some instances County Councils have established farm schools of their own; and the lads in attendance at these schools go through a course of instruction similar in some respects to the six months' course in agriculture given at the College at Reading. Provided these lads are below the age of 16, there is no danger of overlapping; but, on the other hand, when they are over the age of 16, it will be obvious that a fully-equipped institution such as the College at Reading can deal with them far more effectively than any small local school. Unless this fact is grasped there would appear to be some risk of uneconomical duplication of effort and expense. For the elder lads, scholarships might be offered by the County Councils in larger numbers than at present, to enable them to go through a winter course at Reading. On the other hand, it is equally desirable that encouragement should be given to those who are in a position to take the longer Diploma course, and I should be sorry to popularise the shorter course of instruction to such an extent as to starve the longer diploma courses. As regards your question as to the views of the average agriculturist on agricultural teaching, I may perhaps say a word. Having now served on Agricultural Education Committees of our great Societies and other bodies for 30 years, I notice a very distinct change in the attitude of agriculturists towards such work as that carried on by this college and other similar institutions. Formerly, agricultural education was supposed to be calculated only to produce a theorist, who was out of touch altogether with practical work, and it was the divorce of such education from practice which occasioned those lamentable examples of failure which were subjects of derision on every country side. While the English agriculturist is just as decided as ever that science alone will never make a farmer, yet he is beginning to understand that the practical farmer can learn a great deal from science, as a hand-maid to practical agriculture, and the scientific teacher is learning on his part to be less "cock-sure" as to the practical value of any single experiment, and is realising to a greater extent than hitherto how exhaustive such experiments must be, and how necessary it is that they should be repeated under all conditions of soil, climate, and variations of rainfall, before it is safe to dogmatise on any subject whatever, still less to recommend, off-hand, any considerable

departure from the farm customs and methods of tillage in use in any particular district. On the part of the ordinary farmer there is a greater disposition to appreciate the value of expert knowledge and the uses of experiments. In support of this general opinion Mr. Percival will mention (1) the willingness of farmers to devote land for experiments (2) the increasing number of enquiries addressed by farmers to the agricultural department. It is perhaps more appropriate, however, that I should lay stress on the fact, which Mr. Percival and Dr. Keeble can hardly be expected to emphasize, that practical farmers and gardeners have exhibited remarkable readiness to attend courses of lectures by these gentlemen at Reading. It may safely be said that while a farmer or a gardener may, without much difficulty, be tempted as an experiment to go to a single lecture, he will not attend a whole course of such lectures unless he is convinced of the practical advantage of so doing. A class of about 40 gardeners from Reading and the vicinity has attended weekly lectures throughout a whole session. These lectures were given chiefly by Dr. Keeble, although some of them were delivered by Mr. Percival. Quite lately Mr. Percival has given four lectures in Reading on "Artificial manures—their nature and use." These lectures were attended by an audience of from 20 to 30 farmers, some of whom came a considerable distance. The information on such questions as milk, manures, seeds, etc., which Mr. Percival has thus been able to impart in a popular and pleasing way, has been greatly appreciated. Perhaps, however, and here I speak from my own personal views very strongly, the greatest need of the present day is an opportunity for affording to the elementary school teacher, male and female, facilities for acquiring that knowledge of the rudiments of agriculture and horticulture which shall enable them to interest their scholars in country pursuits. The Saturday course for teachers in practical horticulture at the College Gardens during the autumn and winter has been greatly appreciated by them, while the certificate in nature study, awarded after a two weeks' course in August, with such a subject of instruction as "The choice and use of a school garden" has in past years proved extremely valuable and has met a great need. It is extremely disappointing that County Councils do not more fully realise the importance of affording teachers pecuniary assistance to enable them to take advantage of these opportunities. Useful as these short courses are for the existing staff of elementary teachers, the certificate in horticulture course of 40 weeks is even more essential for every young person, of either sex, who desires to qualify for the teaching profession in the future. Such qualification will be increasingly demanded by rural educational authorities, and Reading University College, by providing such facilities, is in a marked and very special way evidencing its great national value as a normal school of horticulture.

4019. It is your opinion that elementary teachers should attend these horticultural courses of 40 weeks?—Yes, it is, but not existing teachers. The existing teachers could not attend those certificate courses; they could only take the Saturday, or the two weeks' course in August.

4020. Your opinion is that for teachers who are going to rural districts it would be an advantage for them if they could obtain the Horticultural Certificate?—Yes. Before they become teachers they should obtain that certificate most distinctly, and there is Reading College at the present time prepared to meet that need which I consider a crying need.

4021. Do you know anything of the Farm School at Basing?—I know of it, but I have never visited it.

4022. Is that a school that you can recommend?—Yes, for boys up to the age of 16 years, and then I say that Reading College is the very place for them to go on to.

4023. You look at the Basing school as a good preparatory centre for the students who come to Reading?—It is good for those who cannot go any further, and who have to go to work at 16, but it is still more useful for those who are able to come on to Reading College.

4024. With regard to the lectures, do you attach great importance to lectures being given throughout the county?—I can only speak of those that have been delivered in Reading. I have attended some of them and I consider them of very great service. I believe they are equally as useful when our Professor of Agriculture goes down to Dorsetshire and gives lectures

there, but I do not think Reading College is in a position to send peripatetic lecturers all over the adjacent counties at present.

4025. I do not mean that the college should send them, but do you think lectures are an important element?—I think they are very important, and also that it is very gratifying to find that farmers are very willing to come to them now, as they were not 20 years ago.

4026. And that the lectures should be accompanied by experiments?—I presume you are not speaking of demonstrations in the room in which the lecture is given, but experiments and demonstrations on the land?

4027. Yes.—Yes, such field experiments are most desirable.

4028. Experiments carried out in the summer, afterwards illustrated by lectures given in the winter?—Yes, certainly, and lectures also on the experimental field; farmers would be only too delighted to go and have an experiment explained to them just as Dr. Voelcker has for many years at Woburn.

4029. You attach great importance to the work of research that is carried out at the farm?—Most certainly, and I hope that it will be very much developed, but of course that makes it all the more necessary that the staff should be increased, and it makes it difficult for us—I am speaking now as a member of the college—to spare our professors to go about giving these popular lectures.

4030. More money should be spent on that department, you think?—We certainly want more money for that; I am sure it could be spent with advantage.

4031. (*By Lord Barnard.*) I gather from what you have told us with regard to the elementary school teachers, that you would not agree with one witness who came before us, who informed us, that, in his opinion, the curriculum for the instruction of elementary school teachers was already so overloaded that it was barely possible to carry it out satisfactorily, and that it was impossible to add to it, and that a 40 weeks' additional course would be a very serious burden to the budding elementary school teacher?—Yes, I quite appreciate that difficulty.

4032. You attach great importance to the suggestion that County Councils might most usefully expend their funds in developing higher instruction in agriculture in the granting of scholarships so as to enable clever boys from the county, who otherwise would not get such an advantage, to have the advantages of your college. You attach great importance to that?—Very great importance indeed.

4033. With regard to the possibility of overlapping to which you referred, have you any scheme in your own mind as to how that could be prevented?—Yes. My point is that the County Council with their farm school should not go beyond the age of 16.

4034. How could you prevent them?—I do not know about preventing them, but we could urge the importance of the boys going on to institutions like Reading and Wye and other places where they have a far more efficient staff and where the appliances are up-to-date. No county school could possibly offer such advantages.

4035. Would you approve of anything like a central authority which would have an advisory power, such as the Board of Agriculture, and a consultative committee?—Quite

4036. (*Mr. Acland.*) Can you suggest any development of your college work which would be likely to induce increased grants from the neighbouring County Councils?—I have never heard of any desire that we have not been glad to fulfil. I do not know whether we have thought of everything that could possibly be an inducement, but we certainly have never refused anything that has been desired.

4037. You do not think any deficiency in your college work is the cause of the smallness of the grants?—I do not at all. I quite agree with what the Principal has said about the County Councils in our neighbourhood being very friendly to the College, and they would be delighted to give more money if they had it to give. I was on the Oxfordshire County Council myself for many years and I know that the most friendly feelings exist between them and the college.

4038. There is an equal distribution of "whisky money" in the case of all the County Councils, and can you suggest any reason why these particular counties should give so little compared with what the

other counties in England give where they have an agricultural college?—I was not aware that we were so far behind.

4039. It is unfortunately so. You stand very far at the bottom with regard to grants from the County Councils.—Of course we are very much behind in secondary education. Secondary education will swallow up a great deal of our money for some time, and that has no doubt partly accounted for it. I think one suggestion that was made, that perhaps the large sums that have been given privately have injured the position of the college in the eyes of the County Councils, can hardly be the cause, because I think probably the fact that the college is looked upon with satisfaction by the County Councils and public bodies, encourages private individuals to give. I know it is so in some cases.

4040. You cannot suggest either a cause or a cure for the comparative smallness of the County Council contributions?—No. I think it is for the members of the County Councils to realise the need more fully than they do now of scientific education for the farmer.

4041. You live in hopes that they may gradually come?—Yes, because I have seen such an immense change in that direction in the last 25 or 30 years.

4042. (*By Mr. Lamont.*) I should like to ask you whether any students from the Colonies take the horticultural course?—I am afraid I cannot answer that question definitely, but of course there are others in the room who can. (*Mr. Childs*) Some do.

4043. Can you tell me if any of the horticultural students come from a tropical country. (*Mr. Childs*) I do not think so.

4044. (*To the Witness.*) Can you tell me whether the horticultural course would be of any use to students coming from the tropics?—(*The Witness.*) I should hardly think so.

4045. Take the West Indies with which I am well acquainted, it is extremely difficult, almost impossible out there to get men who have any knowledge whatever of scientific horticulture, and with the great development the fruit trade is undergoing just now, it is extremely important that we should get some men who have a knowledge of the methods of the improvement of fruit culture and the gradual development of the various kinds of tropical fruit trees, and what I wanted to know was if you thought it would be of any use if your British students were invited to take up posts out there, and whether their training in horticulture at Reading would be of any use to them in tropical fields?—I know that one student at Reading has been a great success in Egypt, and that is half way to the tropics. The Director is here, and he will be able to tell you much more about what is offered in the way of instruction there, but I should certainly think it would be an extremely valuable thing for a man, seeing what an up-to-date English horticultural education means.

4046. Supposing, to put it in the other way, that West Indian students came to you to complete their course of training after having gone through a course in an agricultural secondary school, do you think they would then go back probably better qualified for the management of a fruit farm in the West Indies than they otherwise would be?—They must do so; there would be no doubt about it.

4047. (*By Lord Moreton.*) I am not quite sure I clearly understood you when you mentioned the short courses. I think you said something about labourers' sons being unable to attend them except by the aid of scholarships?—Yes.

4048. Have you had any cases of *bona fide* labourers' sons coming under those conditions?—I do not think we have ever had a scholarship which has brought them—gardeners' sons but not agricultural labourers. What I hoped was that Reading would be as it were at the top of a ladder beginning at the elementary school, going through the Basing type of school, and then coming on to Reading.

4049. Do you think the son of an ordinary agricultural labourer could afford to come unless he had a scholarship?—He would have to have a maintenance scholarship as well.

4050. Would you mind telling me what, in your opinion, would be a sufficient sum for a labourer's son to come there with a scholarship?—Do you mean for maintenance exclusive of the college fees?

Mr. M. J.
Sutton.

15 May, 1907.

Mr. M. J.
Sutton.
15 May, 1907.

4051. What would it cost a labourer's son first of all to come?—For a forty weeks' course?

4052. For a short course?—I do not know what the college fees would be. I think that is a matter for the College officials. I do not think I should be able to answer that question, my Lord; I am very sorry.

4053. (By Mr. Latham.) You spoke of the sons of large farmers and landowners coming to the College. Do they come in large quantities?—No, I do not suppose they do.

(Mr. Childs.) There is a very distinct proportion of large farmers' sons.

(The Witness.) I am not in a position to answer with regard to the figures.

4054. There are many men in a much larger way than Mr. Judd who do not take any interest in the College in the way of sending their sons, are not there?—I should not have thought there were many men who were in a larger way.

4055. Yes. Many that I could mention. I am a member of the Berkshire County Council. Do not you think they have wonderfully gone back in the assistance they extend to agricultural education?—In the actual amount of money they allocate to it, do you mean?

4056. The interest they display in it I would rather say?—I am not on the Berkshire County Council, and I do not know.

4057. I am. We used to give scholarships to the College, I believe. I know several boys who went to the College at Reading and I look upon it as a disgrace that we only give the small contribution that we do towards it?—I agree.

4058. We have no agricultural committee on the County Council. Do you not think that is a great loss to the agricultural interest?—Yes, certainly.

4059. Why is it that you are so fond of the winter courses? Do you not think summer courses would be beneficial?—Do you think a farmer's boy could be spared from the farm so well in the summer as he could in the winter?

4060. That may be so, but I was thinking that there was so much more to teach them in the summer than there is in the winter?—On the land?

4061. In every way?—Of course the supposition is that the boy has a chance on his father's farm of doing a great deal on the land, and seeing a great deal on the land, in the summer, and that he can utilise his time much better by going to these classes in the winter. Of course for practical teaching the summer is the best time of the year, and he goes to Reading usually for theoretical teaching.

4062. After he has had a good spell outside, away from school, do you not think it very much unfits him for coming back to inside study?—That is the old argument. If it is a question of a diploma, the probability is that if he takes his practical work outside with his father for a year or two after leaving school he is unfitted for buckling to again for his diploma course. But I do not think that applies to a winter course. The diploma course is a totally different thing from the winter course that is provided at the College.

4063. You said there was a great service rendered to agriculturists by the laboratories. Do you not think the Fertilisers and Feeding Stuffs Act has had a great tendency in that direction?—You are not speaking of the last Act?

4064. Both of them if you like. Of course farmers thought nothing about it until the last Act came into force?—In that respect they have been very useful, but whether in any other respect is a question.

4065. I suppose the last Act has been of the greatest benefit to agriculture?—I am very dubious indeed myself as to its results proving to be of any general benefit.

4066. (By Professor Middleton.) You said in your own experience you had found that the farmer was learning to appreciate scientific work?—Yes, of late years.

4067. Could you give any reasons for that appreciation. I think you have already stated it in your statement, but I did not quite catch it. Why has that change of attitude taken place?—I think it is on account of better education.

4068. The farmer himself is better educated than he was?—He is better educated than he was 30 years ago; there is no doubt about that.

4069. Is there any difference in the method of teaching; you said the scientific teacher was less cocksure now than he was as to the practical results of his experiments?—The sons as well as the farmers themselves have learnt more.

4070. They have both improved within the last 25 or 30 years?—Yes. I think the farmer is more willing to learn now when he finds that the professor realises something of the difficulties of the calling.

4071. That is exactly it; when the farmer realises that the scientific man understands his business, the farmer is then willing to listen to him?—Yes.

4072. That is the change that has come over them?—Yes. I am thinking of the difference between Mechi's time and the present time.

4073. When the farmer comes to the scientific man you will agree with me in saying that what he wants is expert advice?—Yes, quite.

4074. He does not want general teaching; he wants certain problems which have troubled him answered?—Yes, you are now thinking of the adult farmer, the man who would attend these lectures on market days.

4075. Yes, and you agree with me, therefore, that the change in his attitude is largely due to the fact that the advice which he now gets is very much more satisfactory than he was able to get 25 or 30 years ago?—Yes, quite.

4076. (By Mr. Medd.) What should you consider to be the main defects in the agricultural labourer to-day—the man whom you have to employ?—In education?

4077. In general ability, intelligence, aptitude, or skill?—They are none of them actually so clever at thatching and hedge laying and ploughing or any other operation as they used to be.

4078. It is more difficult to obtain a skilled labourer than it used to be?—Yes, no doubt.

4079. And the handyman, so to say, has disappeared almost?—Yes, usually.

4080. The intelligence of these men is very defective as a rule?—Yes, probably, because the best go away from the agricultural side of the country altogether; they are educated for other walks in life.

4081. You agree that a great deal of that might be remedied by more appropriate teaching both in the elementary day and continuation school classes?—Yes.

4082. You have found that these courses for elementary teachers in Oxfordshire have been and are doing a great deal of good?—Yes.

4083. In Oxfordshire you have done a great deal to encourage school gardens and allotment cultivation, have you not?—Yes.

4084. By shows?—Yes.

4085. Could you describe the organisation of those shows and the giving of prizes. Where are they held—at different centres?—I have been off the Oxfordshire County Council for two years, and I am not quite prepared to give you an answer as to details.

4086. As a matter of fact more has been done by that County Council than by most counties to encourage school gardens and allotments?—Yes, we took it up very seriously.

4087. Perhaps you will agree with me too that similar work both for the teachers in the continuation schools and the day schools might be stimulated by a little sympathetic inspection by the Board of Education?—Yes. We have the facilities for carrying on nearly all that we wish to do, but of course we want a little more sympathy as you say, but the main difficulty is to find a teacher sufficiently instructed in nature subjects to enable him in a rural school to carry out the wishes of the Committee. That is why I am so very desirous of seeing Reading a centre where existing elementary school teachers can be coached for such a purpose, and where courses can be obtained like the 40 weeks' course for those who wish to become elementary teachers in the future.

4088. You feel it would be of great advantage if a few selected existing teachers could be sent for a third year's course to a place like Reading?—Certainly.

4089. Have you had any opportunity of studying Lady Algernon Gordon-Lennox's work at Banbury?—No.

4090. Not the grouping of the villages there?—No.

4091. It has been suggested that the Board of Education should become responsible for all educational work. You have great experience, and would you prefer the Board of Agriculture to retain the agricultural work rather than have it transferred?—Certainly.

4092. You are strongly in favour of developing an agricultural department at Oxford University?—Yes, and have been for years.

4093. A department which shall be capable of giving a degree or a diploma in agriculture?—A degree.

4094. And that Oxford should be quite on a level in that respect with Cambridge?—Yes.

4095. And occupy the same position in relation to the Western Counties?—Yes, most decidedly.

4096. I believe you most generously, a few years ago, offered to promote that work?—Yes, I did make an offer.

4097. Would you explain to the Committee the offer you made?—I do not think I am at liberty to do that.

4098. You were quite prepared to do for Oxford what Sir Walter Gilbey has done for Cambridge?—It would not be proper for me to state the exact nature of my offer, but it was in that direction, and a definite sum was named as that required for the initial outlay, which sum I guaranteed. I was very desirous that there should be the same opportunity for agricultural teaching afforded at Oxford as my friend, Sir Walter Gilbey, had arranged for at Cambridge. It was disappointing to find that the authorities could not see their way to accept my offer or to take any steps in the matter of an agricultural degree.

4099. The project now has come nearer, and I hope you will support it as strongly as you did before?—I am very glad to hear it.

4100. (*By Mr. Davies.*) I think you belong to the County Council of Hampshire?—No. For years I was

on the Oxfordshire County Council, but I was obliged to retire through ill health.

4101. Does the Oxfordshire County Council contribute towards the agricultural department at Reading?—I am told that it does.

4102. Are there any scholarships?—The Registrar will give you that information.

4103. With regard to dairy work in the College, is there any overlapping between the Dairy Institute at Reading and the dairy work which is carried on by the agricultural department of the University College?—No, they are one and the same; they are all at work together. The British Dairy Institute is the property of the College, but it is worked by a Joint Committee of the B.D.F.A. and the College, and the practical teaching at the dairy and the theoretical teaching of the College in dairying are worked together; it is all one and the same.

4104. I understand that the College sends lecturers to give lectures here and there throughout the counties; do you think there is any chance of also starting classes in the country districts for farmers' sons and labourers' sons, as a stepping stone for them to such a school as the Basing school, and afterwards to the College at Reading?—Do you mean evening classes?

4105. Yes, or classes lasting for a month in certain districts. Such classes have been tried in other parts of the country and have been found to be successful?—Of course we have no staff available for such a purpose in Reading at the present moment. Do you only ask whether I think it would answer the purpose?

4106. Yes, in bringing more students to the College?—I do not think myself it would be of any practical value in agricultural teaching. You think it would give a stimulus to the boys to take an interest in such, but I would rather depend upon the elementary school teacher, and his giving instruction in his own nature studies and kindred subjects on his own account rather than sending out professors from Reading to give any extra special evening classes. I should be very glad to see an elementary school teacher fitted to carry out that work himself.

Mr. M. J. Sutton.

15 May, 1907.

MR. JOHN PERCIVAL, M.A., called and examined.

4107. (*By the Chairman.*) You are the Director of the Agricultural Department of the University College at Reading?—Yes. It has been suggested that I should offer evidence with regard to field experiments more particularly and local lectures, as well as the use of the College as an institution for the giving of scientific instruction and expert information on other subjects connected with agriculture. The scheme of field experiments which has been carried out at Reading, has been very much in the nature of those which have been carried out at other centres—at least formerly it was the case—single experiments dealing with manurial problems and experiments, which were more or less demonstrations. Recently I have been rather inclined to take up only one or two subjects than a heterogeneous lot of experiments, and to deal with those subjects on a larger basis in order that we should get some definite evidence which could not be obtained by single experiments carried on for a number of years. I have attempted to multiply the centres dealing with one particular individual problem. Swede experiments, for instance, have been carried out on 26 farms, all having the same kind of experiment. It seemed to me that that was the only way in which we could get conclusions which would be free from errors due to the irregularities of soil and season, and not only with regard to swedes, but with regard to experiments on grass land. I have been trying to carry out the same sort of idea in Berkshire and in the other counties associated with the College. It has always appeared to me that those experiments which have been going on are not carried out on sufficiently large a scale to give any sort of conclusive evidence one way or the other, and especially if they are only carried on for one year and then pulled up and taken away to another locality. My particular aim would be to get 100 farms in each county all doing the same thing, so that we could settle once and for all certain

obvious problems, and possibly we might get evidence on the question of irregularities which are very puzzling, and which are always a trouble in connection with experiments. Moreover, I have been attempting at the same time to endeavour to get definite analyses of the fields on which the experiments are carried out. At the present time we do not seem to have much evidence with regard to the connection between the analytical figures obtained from analyses of the soil, and their bearing upon practical results, and I thought that if we could have these experiments carried out on one single subject for three or four years on perhaps 100 farms, if possible, and get analyses of the actual soil not only in the neighbourhood but in the surrounding areas we should be making some sort of progress independently of merely showing and demonstrating certain facts, and that we should be making a real contribution to scientific investigation in problems of this sort. Of course, the experimental work itself is a very difficult matter to carry out from a central institution without some local aid, and at Reading it has been the policy of the department to try and get the County Councils to make appointments of lecturers, which is a matter with which I will deal later, who would be responsible more or less for the carrying out of these experiments, and getting into contact with the farmers in a way that we could not do if we had to do it from the College. As the College grows and the demands on the staff are increased, it is an impossibility for these experiments to be carried out satisfactorily from the central institution, and I think that there ought to be maintained by the County Council in each county a good many centres permanently, preferably near a station. They should be of a simple character—more or less exhibition plots—dealing, perhaps, more particularly with grass lands. Wherever there has been grazing or dairying carried on for a long time throughout the country the grass has become of very poor condition, and we have very

Mr. J. Percival.

4107b

4107a

Mr.
J. Percival.
15 May, 1907.

frequent enquiries on the question as to how to improve that. It is not a very difficult matter to do, and I thought if experiments could be arranged at certain centres near stations, or in localities convenient of access, it would be a very useful thing. This is what we are trying to do, particularly in Buckinghamshire, where we have a resident lecturer attached to the College, and appointed by the County Council. If there are any more details that the Committee would like to have, I should be glad to deal with them.

4108. What are the experiments that are carried out. Would you describe them to us?—At the present time, with regard to the grass land in Buckinghamshire, there have been simple manurial experiments, where the grass is treated in various ways with different types of manures. The literature with regard to these experiments has been forwarded to this Committee.

4109. You have a printed account of them?—Yes.

4110. Then that can be handed in?—Yes; the exact details you will get readily from the printed account.

4111. Your evidence is that various experiments should be conducted at a number of centres for a number of years, in order to arrive at a definite conclusion?—Yes.

4112. The experiments are paid for by the County Council of the county in which they are carried out?—Only indirectly. We pay for all the manures and practically for the superintendence.

4113. You have no difficulty in obtaining farms for the purpose of carrying out experiments?—Not the slightest.

4114. The farmers welcome these experiments?—They welcome them and they apply for more than we can really undertake. We have some difficulty in multiplying them, and it becomes a serious matter to attend to them as they ought to be attended to; but we have no difficulty in getting as much land as we want for the purpose.

4115. These experiments are explained in lectures?—Yes.

4116. The experiments conducted during the summer are explained in lectures which are given during the winter?—Yes, and mostly farmers attend; and of course when we have a number of farmers at these particular centres, we very often ask the farmers to attend and give them an explanation of an experiment on the plot itself.

4117. Are there local committees of the County Councils?—In some counties there are agricultural sub-committees of the County Council, but unfortunately we have not them in each county. There are none in Berkshire at the present moment, and as Mr. Latham has pointed out there is a difficulty there; but wherever there is an agricultural sub-committee in connection with the County Council there is real life infused in connection with the experiments, but not otherwise.

4118. Lectures are given at farmers' clubs too. I suppose?—Yes, at farmers' clubs.

4119. Have you conducted any experiments with regard to sugar-beet growing?—Yes; the County Council of Buckinghamshire gave me a special grant in connection with that matter this year. I had six centres and two different types of sugar-beet obtained from the very best sources on the Continent. Those have been grown, and the results were published a month ago.

4120. Has the result been satisfactory?—Yes, decidedly. We have found that we can grow sugar-beet quite as well as they can on the Continent, and the yield is in fact higher than those from Germany, and the quality is quite equal to that from Germany. The cost of production also is practically as low as it is on the Continent. It is easy enough to grow it here. The whole problem as to whether it is advisable to recommend farmers to take up the cultivation of sugar-beet in this country is more or less a fiscal problem. I somewhat reluctantly undertook it, because I knew pretty well from experience elsewhere what would be the result, but the County Council were anxious to have the experiments carried out. The result was, more or less, obvious. I should like to see some institution established to settle the question and deal with the problem whether it can be carried out from the practical point of view in this country. The question of sugar beet growing has

been so much in the air for the last quarter of a century that it is time something was done to settle the question whether you can manufacture sugar profitably from beet grown in this country.

4121. Have you a factory to which you could send the beet you have cultivated to make sugar out of it?—No, there does not exist such a factory in this country.

4122. Where has the testing of the sugar that has been made from the beet grown by you been done?—The sugar tests have been carried out in our own laboratories at Reading.

4123. Have you had to invest in special apparatus for that?—We have had to spend some money in carrying out the investigation, in the acquisition of certain special pieces of apparatus which we had not got in the laboratory, and which we had to buy.

4124. Quite so. Is the result you have obtained, having regard to the excise duty, one that leads you to say it would be a remunerative crop for a farmer to grow?—I do not think it would be if the excise duty of 4/2 a cwt. on refined sugar is demanded from the English grower. I do not think it would pay unless there was a rebate made. The rebate might not be so much as 4/2; I think it would pay if we got a rebate of 2/6 a cwt., which is practically what the Brussels Convention has arranged with regard to foreign countries; but unless that rebate is obtained I do not think it would be profitable.

4125. Are you of opinion that beetroot would be a suitable crop for small holdings?—Yes, I think decidedly it would—I believe perhaps better than for the large farmers—if there were a factory in the neighbourhood.

4126. There would come in then the application of the co-operative principle?—Yes.

4127. Do you give any instruction in book-keeping at the College?—Yes, that is one of the fundamental things students begin with the moment they enter the College.

4128. And estate management?—Yes.

4129. You are of opinion that the research work carried on at the College is of great value, and is much appreciated by the farmers?—Yes.

4130. You wish to give further development to research work?—Yes, certainly.

4131. The students who go in for the diploma examination also attend the lectures of the general scientific course at the college?—They do.

4132. Therefore the agricultural department and the general department are not separated; they are not watertight compartments?—No; that is the great advantage we possess, because the scientific teaching which is really the trouble, and which an agricultural department I think scarcely ought to have in hand, is done by experts in those particular pure sciences. The difficulty always is to get the science that is taught really well done in many of these colleges, and I think we have an advantage at Reading in some respects at any rate through having general scientific departments to which we can send our students in the first year at any rate, but at the same time as that is going on they must attend lectures in agriculture as far as possible in the first year and book-keeping as well as surveying and veterinary hygiene and other subjects of similar character.

4133. In that respect the Treasury grant which is used for the general purposes of the College for the scientific courses is also of use to the agricultural department indirectly?—Yes, I think so.

4134. With regard to the previous education which your students have had, have you any observations to make on that head?—Yes. I think there is a tendency for the education to be not quite that which it ought to be in order to get the very best work out of the students when they come to us. Sometimes we may have preliminary work to do with them which ought to be done in the school from which they have come, but on a large scale we do not see much of that in Reading; there is only a little of it.

4135. Is it your view that a general education is the best preparation for those students who come to you?—Certainly.

4136. You prefer that a general education should be given to your students before they come to you rather than the instruction which is given in such a school as

Basing?—Yes, I certainly think so. It would be very much better in the long run to educate them generally than to attempt to specialise before they are really capable of studying the special work.

4137. Do you consider the school at Basing is useful for boys who are obliged to leave off their schooling at a certain age—boys who cannot take up your college afterwards?—Yes.

4138. As a preparatory school for the diploma you consider it is better for them to go to a school where the education is purely general?—Yes, but there are many cases where the education is such that they would be quite capable of going on to Reading for the diploma course. Possibly however in the case of the majority of students who go to Basing with the intention of stopping at sixteen I do not think it would be any use sending them to us for diploma work. It would be a useful preparation for the short course.

4139. You think some such sort of school should be provided?—Yes, with a limitation as to the type of work they are to do. There seems to me to be a very great danger indeed of those schools attempting to do work which they cannot do satisfactorily, because of the want of staff and equipment and so on. That must obviously be the case because there are times when the number of students who would attend such a school might be rather small in number, and there would probably be a tendency to keep men there who would be better employed elsewhere.

4140. You would limit the curriculum strictly to the proper work for which such an institution was designed?—Certainly.

4141. You would prevent them from being over ambitious?—Yes, I think so. I think it is best in the interests of the farming community generally not to allow that. But I do not want to give the impression that I am against these schools in any way. It is only in the respect that I have mentioned. They are doing very good work indeed at Basing. I have had the opportunity of examining and inspecting the school for three years officially for the Hampshire County Council, and I have seen the type of student that has gone through that school during that period. They certainly do a very great deal of useful work for the type of individual that is sent there as a rule, and so long as they keep students of that type there I think it is a very useful thing indeed. If it is a question of multiplying them, I should hesitate to express an opinion as to whether it is advisable to multiply such schools all over the country; they are somewhat expensive, and it is just possible that you might get similar work done in the county at centres and at evening classes during the winter, or perhaps during the summer, if necessary, with boys of that type.

4142. More as a continuation course?—Yes.

4143. In the way of evening continuation schools?—Yes. I do not know whether it is a question of finance, but it is a matter that is well worth looking into.

4144. Then with regard to the training of elementary teachers?—Dr. Keeble who has charge more particularly of that subject will give evidence later as to that.

4145. Do you consider that the diploma which you award at the College fits a man to give agricultural instruction himself?—Yes, I think so.

4146. Some of your diploma students have become agricultural teachers?—Yes. Of course it is not that all of them would be capable of doing that. You have to consider the original history of these students to some extent, and their general bias. It is impossible to turn a student at Reading on to teaching work in all cases; some would be very much better than others through having some preliminary knowledge of farm work. Some of them I should send to a farm for two or three years after they got their diploma before there could be any idea of their taking up teaching.

4147. Have some of your degree students after leaving you gone to Cambridge?—I do not think so.

4148. You encourage them to go to London?—Yes. It is only lately that the London University have granted degrees in Agriculture, but we have a student now who is taking that.

4149. Have you any criticism to offer on the external University examination for the degree of Agriculture?—

No, I have no criticism, except that I think it is a very useful examination so far as I have seen from the syllabus.

4150. You think it is well conducted?—Yes, I think so.

4151. (*By Lord Moreton.*) I do not know whether you can answer the question that I asked Mr. Sutton, about the facilities for labourers' sons attending at Reading, or getting instruction through Reading?—We only take students, of course, at Reading, over 16 years of age; but there would be no difficulty in the labourer's son, or anyone's son, getting instruction there. There is no special course, however, arranged at Reading for labourers' sons, many of whom have been only partially educated. A great many of them would be able to get their education at evening continuation schools, or at schools such as Basing; more preferably the continuation schools.

4152. (*By Mr. Staveley-Hill.*) I should like you to explain, if you can, an answer to a question which was given by the last witness this morning. I meant to have asked him about it. He spoke of a certain number of your pupils who became gardeners—whose after-careers were found to be that of gardeners in various employment. In answer to Lord Moreton, you say you have no labourers' sons at the College—how do you quite explain that?—Of course the question of the horticultural student would be dealt with by Dr. Keeble particularly; we have no special courses for labourers' sons as labourers' sons, but there is no reason why half the students who have come to us are not labourers' sons. I do not know that they are not.

4153. That is possibly the explanation. At any rate, we will probably get it from Mr. Keeble. With regard to these local lectures on agricultural subjects, do you give them throughout the contributing counties as well as in Berkshire?—Yes. Those local lectures are chiefly of course given during the winter by members of the College staff. In some cases lecturers are appointed by the County Council who are technically on our staff, but resident in the county itself. Buckinghamshire is a case in point. My own view is that we should have, if possible, in every county a definite resident lecturer, who would be attached to the College and get all the help and advice he could from the College, and spend a certain amount of his time at the College if necessary, but be resident in the county and give lectures to farmers on the more obvious problems that come up, look after experiments, get material for analysis, and in that way come into contact with the farmers. Those lectures are continually being given in the winter; we are under contract to give a certain definite number each winter as a rule.

4154. Is it within your knowledge that these lectures are well attended?—Yes. I frequently give many of them myself. The audiences, of course, vary very much. In some places, right out in the country, in the wilds of Oxfordshire or Buckinghamshire, you may not get very many, but those who do come are really keenly interested in the work, and they continue to attend the course whatever it may be, perhaps three or four lectures. During the winter I have had lectures in Reading on market days, and I tried the experiment of having them on Wednesday evenings, at 6 o'clock, and they came, between twenty and thirty of them, from various parts of the county up and down the line.

4155. Do you have lectures or instruction given in veterinary subjects?—In the College, but not outside at present.

4156. Have you considered the advisability of giving those?—In some cases those have been given in the county, not altogether under our auspices, sometimes by the County Council.

4157. In the event of your obtaining what apparently every college wishes to obtain, an increased grant, would you think it worth while to devote some part of that grant to encouraging and increasing these lectures on veterinary work?—Yes, I think so. I think that is one of the weakest parts of the agricultural teaching in the country.

4158. (*By Lord Moreton.*) What part of the county of Oxfordshire do you cover—you talked about the wilds of Oxfordshire?—A list of the centres at which we are supposed to give lectures is handed in to us by the Oxfordshire Secretary, and we go there. What information he has for obtaining the centres I do not quite understand, but certainly any centre applying

Mr.
J. Percival.
15 May 1907.

Mr. J. Percival. for lectures on agricultural subjects would get them; which is a question of local interest.

15 May, 1907. 4159. You are speaking of the future now, are not you?—No, of the past. In some places they have had lectures regularly for six or seven years, and in other places they have had none, because they do not apply for them.

4160. What part do you particularly refer to?—Principally in the north, and in the district of Thame, on the Buckinghamshire border, and north of that.

4161. (*By Mr. Davies.*) I notice that in your staff you have several professors who teach chemistry. Do your agricultural students attend the chemistry classes of the College as well?—Yes; the first year is devoted almost entirely to the purely chemical side of the teaching, and they go into the chemical department specially for that, and subsequently they are taken in hand by the specialist in agricultural chemistry.

4162. Do your short-course students attend the chemistry department lectures too?—Yes, they attend both; we have a special course for those men, a blended course.

4163. They are able to appreciate the instruction they get in chemistry?—Yes. We attempt to give them no chemistry that is not of immediate use to them in the short courses. It is quite useless to spend much time on pure science in those cases, but you can give them a good deal of instruction on definite points in connection with manures and so on, and that is not a difficult matter to arrange.

4164. You are able to make use for that purpose of the equipment provided at the College?—Yes.

4165. Do you make any attempt to teach any kind of agricultural history in your department?—No, we have not done so, except as incidentally in the case of all lectures; I think it is best to begin with a sort of historical account of things—but we have no lectures specially dealing with the history of agriculture.

4166. Do you think it would be desirable in the course of agricultural instruction to devote some attention to that phase of the subject?—I think so, if there was time for it. It is a matter that has been of very great interest to me for many years, the study of the literature on the subject right back to the sixteenth century and from that date onwards, but it is very difficult to find the time for it with the ordinary students. I should think, however, it would be an excellent plan, especially with the students who are taking the higher courses.

4167. With regard to the experiments and demonstrations that you carry on in the counties, do you think it is desirable—or have you any views with regard to the co-ordination of the different experiments carried on all over the country by the various colleges?—Yes, I think it would be a very useful thing to have certain similar types of experiment carried out all over Great Britain. There have been a large number of different kinds of experiments, some only slightly different from each other, carried out in the past, that scarcely any conclusions are to be deduced from them. I think the Board of Agriculture does suggest a scheme for experimenting on those lines, but I am not sure that it has been taken up very extensively, possibly because the experiments have not been understood altogether, and the extent of the work demanded by that scheme is, I think, in many cases too large. But it would be an excellent plan to have some definite types of experiment carried out, say over one thousand farms in Great Britain. If that were once done for three years—that would be quite long enough—we should then be able to record the results and to put away on one side those results as trustworthy, and as evidence that is worth having. There has been hitherto such a lot of moving the experiments about, that very little real good has come of it. That is a thing that should be arranged by the Board of Agriculture, and possibly the County Councils themselves, maintaining definite centres and refusing to allow a farmer to have an experiment on his land unless he will guarantee to keep it going there for three years. That is what I have been doing in Buckinghamshire. There are plenty of people who want to carry on experiments and I make it a condition that if an experiment is to be commenced on a person's land, I am to have the use of it for three years to allow that experiment to be brought to a definite conclusion, and I have no difficulty in getting it.

4168. Would you think it desirable that the Board of Agriculture should appoint a consultative committee with representatives on it from different parts of the country?—I think it would be a very useful thing.

4169. One witness told the Committee that he thought all these demonstrations should be of a migratory character, because difficulties were created in the different localities if these demonstrations were all carried on in one place, and were not migratory?—Yes, it is necessary that they should be migratory, but I would not have only one experiment; I should have perhaps 50 in one county. Superintendence is the difficulty, but I should never think of having only one experiment in one locality, and then raising that and going to another locality and showing them the result of that experiment. You ought to have the same experiment multiplied in 50 different places simultaneously, and not have only one experiment carried about to different parts of the country.

4170. Would you like to see it carried out on the principle that is adopted in America of sending out a paper to all the farmers asking them to state the results of their experiments, and so gathering the general results of the whole?—Yes, that would be a very excellent plan. The more definite in type the experiments are and the more we can get of the same type, the more useful and permanent the conclusions would be. Further, I would not limit the type; I should have them on the results of the use of the different manures, the testing of potatoes, and so on, all over the country.

4171. Have you any institution for keeping in touch with your old students?—Yes, we have an Old Students' Association of the College, and they meet once a year.

4172. You have no special organisation of that kind for the Agricultural Department?—Not for the agricultural department alone, but that might possibly be developed.

4173. I do not quite know what your relationship is with the School at Basing. Do you act in the capacity of advisers in any way of the staff there, or have you any sort of control over them?—I am personally on the Advisory Education Committee of the Hampshire County Council, and we examine the school officially—we spend two or three days there. Practical dairying and farming, and all the curriculum is carefully gone through.

4174. You do not carry out experiments there?—No, not there, they carry out their own. But they get advice and suggestions from us—for instance, yesterday I had the manager of the Farm School at Basing down to talk over a scheme of experiments which they are beginning there.

4175. You would like to get into closer touch with Basing?—Yes, I think so, and Hampshire generally.

4176. (*By Mr. Latham.*) To go back to the lectures, what centres in Berkshire have you taken during the winter?—They have only been as a matter of fact in Reading, since I have been there.

4177. I think you have a syllabus for those lectures?—We have, but I have not a copy here.

4178. I dare say you can recollect the subjects?—Yes. I find it is very much better to give lectures on defined specific subjects rather than to attempt to deal with a course. A farmer will come and listen to a lecture, say, on linseed cake, or on nitrate of soda, and how to use it, much more readily than he will attend the course of lectures on manures generally. He does not want to learn a great deal all at once, and I find it is much better to give them lectures on some definite subject. The lectures that I gave at Reading on the market days were, one on basic slag, on the use of it, what it was made of, its cost and so on, how to buy it sensibly, and another on the growth of malting barley, and the use of lime, and I think the use of some other manure, and the milk standard and so on.

4179. Those different lectures were advertised and the farmers all knew what they were going to listen to before they went to them?—Yes.

4180. Do you not think a great mistake has been made in the past very often because a farmer has come to listen to a lecture, and when he has got to it, he has found that he could not understand it at all?—Yes, that has been the great mistake that has been made.

4181. Is it the wish of the College—I will not say the County Councils—to continue these lectures in the

outside towns on market days?—Yes, I should like to do that certainly, but it is more a question of getting time for it as far as we are concerned. I think in Berkshire, we could probably do it and also at several other centres, but as the work of the College grows it becomes difficult to attend to the county wants in many cases. That is why I strongly recommend that an appointment should be made of some member of the staff to be set aside to go about the county, to come in contact with the farmers, and let them know what is going on. It cannot be done really satisfactorily from any permanent central institution; you must have a travelling lecturer connected with the central institution and resident in the area, and then you would get a great awakening in scientific education and general agricultural training.

4182. He should be a member of your staff, and you should be responsible for the sort of lectures he gives?—Yes.

4183. You have had a good deal to do with Wye College, have you not?—Yes.

4184. So that naturally what Mr. Hall and Professor Dunstan have said here, you would re-echo to a certain extent?—Yes.

4185. You have lately taken a new farm at Reading, have you not?—Yes, about 150 acres.

4186. That does deal with horticulture?—No.

4187. What is about the quantity of the cows you have?—We have about a dozen, I think, now.

4188. I suppose it is fair for me to put in evidence these most excellent milk-test cards that I get sent to me every week?—Yes, I think so; they are quite independent of us.

4189. You consider from your point of view, which means from the point of view of your own farm, and also from the point of view of the quality of the milk that has been supplied to the Institute, that enormous strides have been made through suggestions and help, and so on, that have been given from your Institution?—I think it is likely.

4190. I think you ought to admit that. Before your educational help went to the persons who sent the milk in, it was of bad quality, and through your suggestions—I do not mind taking a little of the credit to myself—it has been very much improved?—Yes, very much.

4191. That would be an excellent subject for a lecture would it not?—Certainly.

4192. That is the kind of subject that would probably bring the farmers together more than perhaps some of the higher scientific lectures?—Yes.

4193. That is what I want you to show this Committee, that the milk standard is a sore thing with some of the farmers, and that there would be little or no difficulty in getting the milk standard up?—No, there would be no difficulty in getting the standard up.

4194. You spoke of sugar beet growing on small holdings. Do you think that might be made profitable to a man with a small holding?—I am afraid I must decline to discuss the profitable side of it. As I have pointed out, it is a question of fiscal policy as to the profit that you would get out of it in this country. It is quite clear, however, that we can grow sugar beet as good in quality and quantity as any sugar beet growing country in the world and also as cheaply. The question whether it will pay or not does not depend on whether we can grow it; it depends on the duties for revenue purposes. At the present time there is a duty of 4s. 2d. a cwt. on refined sugar coming into this country, simply for revenue purposes, and if a rebate in the duty on refined sugar were made in the country generally for the purpose of enabling the English farmer who attempted to grow sugar beet to make a profit, the revenue authorities would immediately want to know how to make up the deficit that would thereby ensue.

4195. I should like to know, for instance, whether Mr. Sutton would make more out of his mangels, or more out of his sugar beet?—He would probably make more out of his mangels, but that does not apply to the question whether we can grow sugar beet in this country.

4196. You said just now that sugar beet growing was particularly applicable to small holdings?—Yes.

4197. A man with a small holding could not possibly

grow enough to make it profitable?—That is a matter of opinion, of course.

4198. To go back to the teaching of these young men in the evening classes, do you think you are likely to get the young men to give up their evenings for any continued length of time?—We have found that they certainly do give up their evenings.

4199. That is purely local. They will not come for eight or ten miles to attend evening classes?—That may be so, but locally we can get quite enough to make it a very valuable work.

4200. In order to touch the different localities, you would want classes to be held at the various local centres?—Yes, that could be done by holding lectures in the different centres.

4201. Not lectures, evening classes, and I do not see how you could get attendance at evening classes at every centre in the county?—I do not anticipate that. I think we have got as much as we can do at Reading, and that is a valuable work, and that satisfies us.

4202. But that means that certain localities have to be neglected?—Certainly, it would mean that probably.

4203. Do you not think there ought to be scholarships offered in every county?—Certainly, I think there ought to be scholarships in every county, and it is the want of those scholarships that explains a good deal with regard to the cutting down of the number of the short-course students.

4204. I have not heard any questions asked, and I do not think you have given us any information with regard to the fees charged at the college for agriculture?—You will find those in the calendar.

4205. Would you mind telling me where?—The agricultural fees you will find on page 68 of the calendar, and in the prospectus at page 10. You will see the exact details are given there with regard to the fees that are payable by each student for the Diploma in Agriculture and Dairying, and the Certificates in Dairying and Agriculture, and also the reduced fees for those students who come from the counties whose Councils contribute to the Agricultural Fund of the College.

4206. Of course those are without residence?—Yes. The reduced fees for the Diploma in Agriculture is £13 10s. for two terms, in Dairying £12; and for the Certificate in Agriculture, £9; and in Dairying, £17 for two terms.

4207. What would be a fair scholarship to grant, to include maintenance?—I should think possibly £30, it would amount to as much as that.

4208. If it is possible to get, say, half-a-dozen scholarships out of the counties, a £30 scholarship would be sufficient. I am only speaking of the teaching—not of the residence, of course?—I should say £20 for the teaching and £30 for the residence.

4209. So that to cover it all it would be £50?—Yes.

4210. I asked you just now with regard to the winter course. Do you not think if you had two courses, a winter course and a summer course combined, it would have a very much greater effect on the education?—I think a summer course would be valuable, but it is exceedingly difficult to get a student to attend in the summer, because he is generally very useful to his father on the farm at that time. That is the sort of student who would not be likely to use the summer course, but of course we have a good many who come for the whole year mainly for the diploma work, and I think that course is the better of the two.

4211. If he is let away from one winter course to the other, I should have thought that his free hand in the interval would operate against his coming back for the next winter course?—I do not think that applies, because we have had men who have come back for the next winter course frequently.

4212. Would you recommend that the difference in the soils in different localities, and in the atmosphere, and so on, should be registered by means of demonstrations, and that sort of thing?—Yes, certainly.

4213. Should it be laid down by the Board of Agriculture what line those demonstrations should take?—I think by the Board of Agriculture in consultation with individuals in the different localities.

4214. If they are to be of any use they must all be exactly on the same subject?—Yes, certainly.

4215. Do you think that large farmers and landowners

Mr.
J. Percival.
15 May, 1907.

Mr.
J. Percival.
15 May, 1907.

are getting more anxious to send their sons to colleges? —I think so, certainly.

4216. Can you demonstrate in what way?—We have got more students, as a matter of fact, at Reading than we had of that type coming from that sort of home.

4217. For what length of time do they stop with you? —Two years, the Diploma student. Those are the individuals we are wanting to encourage more particularly, as well as the short-course students.

4218. They stop with you during the whole time?—Yes, except of course during the vacations. We then recommend them to go back, either to their own farm or to some farm, rather than do nothing, or even be at Reading itself. There are three terms consisting of 10 weeks each, and then there are the vacations; and I should strongly recommend them to go on to a farm immediately, somewhere else, rather than at Reading.

4219. Among the demonstrations that you have taken up at your farm, are there demonstrations showing the nature of the soils, and the damage the several manures will do to the soils?—Yes, we are trying to do that.

4220. They create a large amount of interest?—Oh, yes.

4221. Do you show in these lectures experiments on growing crops with certain manures?—Yes, we always have illustrations.

4222. Do you think the lad of sixteen years can be induced to come to you after he has left his ordinary education?—Yes, he does certainly.

4223. To what extent?—As I said, we have more than we had previously; within the last two or three years we have had more of that class of student.

4224. Are they for the short course or the long course?—For the long course.

4225. It is the short course I want to know about?—In the short course there are not so many as there were formerly, and that I think is accounted for by the fact, mainly, that the County Councils have stopped scholarships covering those.

4226. Do you give any lectures in live stock valuing, buying and selling?—Yes, that is given by the agricultural lecturers, Mr. Evans and Mr. Atkinson.

4227. It is scarcely necessary for me to ask the question whether they are competent to give those?—Yes, I think they are—they would not be there if they were not.

4228. Quite so. Your work has been enormously increased lately from the laboratory side?—Yes. I am going to deal with that afterwards, if I may.

4229. I should like you, if you will, to say a few words on that now?—The question of the use of the laboratories of the College as a place for giving scientific instruction on various points I was going to deal with. I think you have the figure there of the results of the scientific experiments that have been carried out during the last three years. On sheet H you have a statement showing the analytical work which has been done in connection with the agricultural department with regard to over 700 samples of various kinds of material that came from farmers, and which have been investigated and reported on during that time. That is a kind of work which I think is of the utmost importance, perhaps as important as any at the present time for enlisting the interest of the farmer. I have felt that in order to get the interest of the farmer as he exists at the present time—the man who is actually farming—you must go to him with something that has a pecuniary value, and this is of real definite use to him. The question whether a feeding stuff is really worth what is asked for it, what its nature is, whether his milk is right or wrong, whether he is likely to get fined or not, the question of whether his manures are adapted for the purposes for which he has got them, whether they

are worth what is being charged for them, are all matters of immediate practical interest, and that is work that has grown very much indeed since we have had an analyst to do nothing else but that type of work. He has got as much as he can get through—independently of course of enquiries dealing with pests and other things which would naturally go in to the same list, although they are not included in this total. These come from farmers in various parts of the neighbouring counties; they are sent in by post or sometimes the farmers bring them themselves into the laboratories and have a talk about them. We are always ready to meet them, and we are always in the market on the mornings of the market day and have a talk with them there. That side of the work is doing almost more than anything else to secure the interest of the farmers throughout the county; it is work of which he can see the value of at once the moment he can talk the matter over. We do not allow the farmers to use any certificate or report which we give for legal purposes; they are simply given for the farmer's own private information. Any matter that we consider is worth his while taking up from the legal point of view we should at once hand on to the proper analyst of the county, the public analyst who deals with the Food and Drugs Act and the Fertilisers Act.

4230. Supposing you were given a considerably larger grant through the Board of Agriculture, in what direction would you principally develop your work?—There are a great many points that want developing I think—the analytical side, the various researches, and the staff. In many cases we want experts for particular subjects. I could not lay my fingers on definite things that we want money for more than others, but I should say we should be able to apply it to a great many things that are simply left at the present time for want of funds—analyses of soils in the county, and so on.

4231. I think you mentioned that experiments on grass lands were sadly neglected?—Yes, that is so, and that is a matter I think which brings its return almost immediately. Grass land in many cases is in such a very bad state that anything like a couple of years experimenting convinces a farmer that he can improve his method in nearly all cases, but those experiments want carrying out permanently for a number of years and on a very large scale so far as numbers are concerned.

4232. It would be of value also in showing that the new system of dairying was not doing the land a vast amount of harm?—Yes. Of course all experiments involving analyses of the soil and so on are expensive, and we want special grants for it. As a matter of fact we have had special grants from some of the county councils for that kind of work. For instance the Buckinghamshire County Council have been giving us a little at a time—they have just given us £20 for some experiments they wanted carrying out, and I should like to see 50 or a 100 similar experiments being carried out at the same time, and at the end of the time we should have something definite.

4233. Experiments on grass lands is one class of experiment that you would like to see carried out?—Yes, that is one of the most important class of experiments, and that would yield immediate and useful returns.

4234. That is one that could not be carried out except by scientific men?—That is so.

4235. It ought to be carried out on scientific lines?—Yes.

4236. You and I have had some conversation with regard to the milk certificate that we had from the dairy before you began the improvements, and I want to ask you whether you are willing to produce the bad certificates with the improved certificates so that we may have an opportunity of comparing them?—I do not think there is any objection to that, and I will see what I can do with regard to it.

Mr. FREDERICK W. KEEBLE, M.A., D.Sc., called and examined.

Dr
F. W. Keeble.

4237. (By the Chairman.) You are Director of the Horticultural Department of the University College, Reading?—Yes.

4238. You are prepared to give the Committee some

information as to the provision for the training of teachers in agricultural or rural subjects and information on horticultural education generally?—Yes. I should like to divide the subjects on which I am prepared

to give evidence into two parts, one on horticultural education, and the other on the provision for the training of teachers in agricultural or rural subjects. It is a matter of indifference to me which of those two sections I take first, if it is a matter of indifference to you?

4239. Quite.—If I may deal first with horticultural education, the principal contribution that I have to make is that until the foundation at Reading of a horticultural department as a definite department, there was, as far as I am aware, absolutely no provision at all in this country for horticultural education for men. The Committee are aware of the existence of several important horticultural colleges for women, such as Swanley and others, but for men there was no provision. The course of study which has been adopted has been outlined, and I need only refer to the salient fact that in order to gain our diploma the student has to attend a two years' course. To that I should like to add, that in almost all cases we are successful in persuading our students to put in a third year, either with us or with some grower or market gardener or nurseryman, before embarking upon his own particular career. You have heard the statistics relating to the posts occupied by our students. Those statistics, it appears to me, indicate that our department is fulfilling a useful part in horticultural education. At the same time I should like to take this opportunity to say that although the horticultural department at Reading may regard itself as being somewhat efficient in regard to its particular work, that of training men for horticultural occupations, it falls, as I think all institutions with similar objects in agriculture do, far short of the national requirements. I feel very strongly that such an institution as ours, and if I were competent to express an opinion I should be inclined to include all other institutions of a similar kind, is only doing at present about half the work which should be required of it. The idea which I wish to put before the Committee is this: That the staff spends its time in teaching and its spare time in research, and we ought to have in addition to that another staff which spends its time in research and its spare time in teaching. Until that is done, it seems to me we cannot claim to have fulfilled our object.

4240. You want part of the staff to be entirely devoted to research?—Not entirely, but mainly devoted to research. I would never completely separate teaching and research.

4241. You would allow them plenty of time for research?—Yes, at present none of the teachers have any serious time for research except possibly at Cambridge. That is a question of finance, perhaps, and therefore one that falls outside my province. Reverting to the experiments in teaching which we have adopted, besides the Diploma course which you have heard of, and the Certificate course which has been mentioned, we also founded some years ago a series of scholarships in the hope of attracting ability from among the gardening class. We offered scholarships of £40 a year to *bona fide* gardeners to come to the college and study under certain conditions. We were sanguine about it and we continued those scholarships for some years, but at last on my own recommendation they were suspended, the reason for that recommendation being that we had failed altogether to attract that ability which we had hoped to get. We had a fair number of applicants, but the general level of intelligence of the applicants was low, and that I think ought to be linked up with another fact that the general level of trained intelligence of the students that we get is not as high as one might expect at this time of educational endeavour. The criticism which one would be inclined to suggest is that the school curriculum has spread itself over a large number of subjects, and at present students come to us untrained as thinkers. That seems not to be peculiar to Reading, but as far as I am aware it is general, and it may be due to the multiplicity of subjects which are taught.

4242. You apply that generally?—Yes. I have experience in other departments besides the horticultural department, and from my general experience I find that it is universal at Reading and at Cambridge, and at other places where I have had experience.

4243. Do you attribute that to the course of education that is adopted at the secondary schools?—I attribute it to the fact that instead of a few subjects being taken as a means of training in schools, education consists largely now of a great number of subjects which are used as a means of giving information. The mind

consequently is not trained: there is not time in which to train it.

4244. You apply that also to the gardeners?—I apply that to our horticultural students. I apply it to all our students of whom I have had experience. They are not so well trained as we should have hoped them to be considering the renaissance there has been in education.

4245. Can you tell us what has been the result of the suspension of scholarships?—A number of young working gardeners go to evening classes. We have had a class which has extended over two sessions. Reference has been made to it already, and it was one of the most instructive classes we have ever been concerned in. It was conducted partly by myself, and partly by Mr. Percival, and we had an attendance of between 40 and 50 working gardeners, who came once a week for 40 weeks in the session, that is to say, 80 weeks altogether, and spent two or three hours or more in the study of subjects bearing on horticulture. They came both from Reading and for ten miles round from the surrounding counties.

4246. How many times did they attend?—For eighty weeks.

4247. After that did you give them any certificate?—No. I discouraged that. Sometimes they write to say they are entering into employment, and they would like something to show their employers what they have done, and in that case we write and give them a record.

4248. You award Diplomas, do you not?—Yes.

4249. From what class do those students come?—It varies from people whose object is to cultivate their own gardens in a strictly amateur way; from people connected with the trade through nurseries and the like; people whose object it is to embark on fruit farming at home or abroad, and who can lay their hands on a small amount of capital, down to people that come, but whom we do not encourage more than we can help, with the object of being working gardeners.

4250. Those you do not encourage?—We do not encourage them because we do not think it wise to encourage people to spend £50 or £70, whatever it may be, in order to enter a profession where they may only earn about the same amount per annum.

4251. All of your students are paying students?—All of them are paying students now. Since we have suspended the scholarships for student gardeners there have been no scholarships.

4252. What is the fee for the session of forty weeks in horticulture?—£18 for the students from the County Borough of Reading, and from the Counties of Berks, Bucks, Dorset and Oxford, and for students out of any of those counties, £24. That includes practical work in the gardens and on the fruit farms, where there is scientific instruction given, but not for instruction in bee keeping.

4253. Those who come from the counties you have mentioned pay a lower fee than those who come from outside?—Yes, in the ratio of £18 to £24. That completes the evidence on the first section of horticultural education. Shall I continue with the second section?

4254. If you please.—The second section is with regard to the provision for the training of teachers in agriculture or rural subjects. This falls into two heads—the training of teachers who are already engaged in rural schools; and, secondly, teachers in training, that is, students at the College who are undergoing preparation intending to become teachers. The essential part of the matter is the training of students who are intending to become teachers, because in the former case the training of teachers who are already engaged in teaching is an impossibility. One can put them a little more in the way of fulfilling their work in rural schools, but one cannot train them in the sense of the word; their time is past. What we have done in that respect, and what we continued to do until the funds were diverted for more pressing needs of education, has already been described. We had a Saturday afternoon class, which, in fact, still continues, although the number attending it becomes fewer. The Saturday afternoon class for teachers comprises fruit growing and the cultivation of vegetables. In addition to that we had, while it lasted, a very successful nature study course of two weeks in the summer holidays, to which people came chiefly from Buckinghamshire. We used that as a means of getting in touch with a large number of

Dr.
F. W. Keeble.
15 May, 1907.

Dr.
F. W. Keeble.
15 May, 1907.

teachers, principally in isolated places, and we helped them in the natural history part of their work. That was relinquished with the greatest reluctance on my part, and for the reason that has already been given, that money was required for other purposes.

4255. Now as regards the teachers in training?—As regards the training of students who are about to become teachers in rural elementary schools the state of affairs appears to be this—that there is no training, and that there is no possibility of there being any training in the immediate future. The Board of Education syllabus is a syllabus which was drawn up apparently by urban people for urban conditions. It has no reference to rural conditions, or even suburban conditions, and our experience with respect to the Board of Education is that it is difficult to modify that somewhat rigid course which is prescribed. Some three years ago the Principal of Reading College and myself drew up a syllabus. We felt very keenly and very strongly this urban oppression, as it were, of the Board of Education syllabus, and we drew up a syllabus which we called, for want of a better name, “Rural Economy.” This syllabus was submitted in an informal manner to certain of the Board’s officers. As a result of that submission it appeared to us distinctly inopportune and distinctly inadvisable to endeavour to introduce a reform of this kind. The syllabus still exists, but the effort has stopped there. If one considers what might be done, and if one may make one or two suggestions, it appears to me that the first thing to do is to get such a syllabus, and the second thing to do is to recognise the principle of segregation with respect to teachers. I have heard to-day that it was suggested that students in training who stay a third year might take up some sort of rural economy course. I have not got the statistics with me, but I doubt if one to five per cent. of the students in training do stay a third year. So that I think we should only touch the fringe of the question by running the thing on a three-year basis. I think the next thing to do, after a syllabus was got from the Board of Education, would be to secure possibly the co-operation of the Board of Agriculture, and then to offer this syllabus as an alternative second year, and if necessary to induce teachers to accept it by offering financial help. The syllabus should be so constructed as to make those people practical with their hands, and to habituate them to the right way of looking at natural objects, so that their life in the country would be pleasant, if training can make it so, and not oppressive, as it seems to be now. If this problem is to be solved, and I regard it as one of the greatest possible problems, it can only be solved by boldly recognising that all the syllabuses of teaching up to the present have been urban in nature, and if the Board of Education has, as its deliberate policy, the training of a town race of teachers, those syllabuses would be the best syllabuses they might reasonably produce. Until some such syllabus as I suggest, or some better scheme is adopted, there will be no training for teachers in rural districts.

4256. You suggest a syllabus, but can you suggest what would be an alternative scheme? As you are aware, the curriculum for the two years is already overloaded?—Yes.

4257. Therefore, if you introduce this syllabus, I think you should also point out what should be omitted from the present curriculum?—I think I would throw the whole of the second year’s subjects overboard. I am no believer myself at all in this multiplicity of so-called subjects, because when one looks into the things, and sees what it is they learn under the guise of these names, one finds there are really very few things, and I think you want revision from a common-sense point of view, and not from a pedagogic point of view.

4258. Would you make your syllabus the principal subject of the second year’s course?—Yes, I would make it the sole subject—I do not mean horticulture, or agriculture only, I mean in this sense rural economy, which would include a great many other things than rural economy of course.

4259. You are speaking of the training of elementary teachers for rural districts?—Yes.

4260. Would you have it at training colleges, or would you invite them to come to your college?—I would have it at any college which had facilities for giving it. I would have it under no circumstances at a training college, because it could not be given there, but at any place which had an agricultural or a horticultural department, or which had a dairy and a fruit station, and poultry and bees there, I would have it whether it was at Reading or anywhere else.

4261. Would you establish a scholarship for the pupil teachers for that purpose?—Yes, I would earmark it for that purpose.

4262. (Mr. Medd.) Might I venture to suggest, my lord, that since this most important question of the differentiation of the training of the rural from the urban teacher has been raised, it would be to the advantage of the Committee if this gentleman could return on the 28th, when the whole of the Committee will be present. This is one of the most important questions, that I think the Committee, as a whole should hear his opinions.

(The Chairman.) I will consult the Committee on that in a moment. I will explain to the Committee what my views are on that subject, if you will allow me just to put one more question to the witness.

4263. Your students for the horticultural diploma course also have the use of the general courses at the college?—Yes, in the science course they attend such subjects as chemistry, botany, book-keeping, and general science.

4264. (The Chairman.) I am quite prepared to ask both Mr. Percival and Dr. Keeble to come again, if they would be good enough to attend on the 28th.

NINTH DAY.

Tuesday, 28th May, 1907.

PRESENT :

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BELPER.

Lord MORETON.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. JOHN PERCIVAL, M.A., recalled and further examined.

4265. (*By Mr. Lamont.*) I think we understood that you represent the British Dairy Institute as well as the University College at Reading?—Yes.

4266. Do I understand that no cows are kept by the Dairy Institute?—No. There is no farm at all: we supply milk from the college farm to the Dairy Institute.

4267. In addition to that they get a certain amount of milk from outside as well?—Yes.

4268. You have cows at the college farm—I think you told us the number, 14 or 15 or so, and you supply milk to the Institute?—Yes.

4269. Can you tell me whether any experiments are made as to the effect of feeding on the yield of milk or on the percentage of butter-fat contained in the milk?—We have not made any at present. We had experiments in connection with the farmer who has been supplying milk to the college some time ago dealing with the question of feeding with certain mangels and other things, and its influence on the yield of milk and on the quality, but we have none on the college farm at present. That is an experiment, however, that I hope to begin as soon as I know the capabilities of the cows.

4270. You are aware that a very wide-spread work has been done in that direction throughout Denmark?—Yes, I know the Danish work.

4271. Do you think that would be a valuable work in this country?—Yes. We want evidence of certain things. I think that the question of feeding has been settled, and that the yield can be influenced by the feeding, but I do not think it has much influence on the quality of the milk.

4272. I think quality is hereditary, having regard to the class of the cow?—Yes, the cow is the most important factor in it.

4273. I should like to know whether anything has been done, to your knowledge, in connection with the improved system of milking which is now in vogue throughout Denmark—you know to what I refer?—Yes, I know what you are referring to, but we have not attempted that. That is a matter that we can, of course, deal with later, but we have not had the farm long enough yet, and we do not quite know the capabilities of the cows. Ever since we have had the cows, we have had the weight of the milk taken, night and morning, from each cow, and it will be very interesting to see what the total yield of each will be at the end of the time, and when we know that we can begin to experiment but it is no use until we know something about the cows.

4274. As you know also, in Denmark they only use those cows for breeding from which have a good milk record behind them?—Yes. Some cows are so poor that they are scarcely worth their keep, and I am certain there is not enough attention paid to that generally in herds. The farmer only knows the milking capacity in a rough sort of

way, and if he knew more in detail what the capabilities of his cows were, he would alter his methods of the rearing and selection of his cows very much.

4275. From my own experience of what was done at Downton with regard to the rough average of the whole of the cows in the college dairy, and also from what I have seen in Denmark, where each cow has its separate register kept, it seems to me that in that field alone there is enormous scope for improvement?—There is, certainly.

4276. I should like to ask you one or two points further as to what you were saying about the cultivation of beet sugar when you were here before. You are aware that sugar-beet growing has been tried in no less than 28 counties in England, and, I think, five in Scotland, and in almost all of those the results have been as favourable, or more favourable than practically in any other part of the continent of Europe, as far as the yield and the sweetness of the beet are concerned?—Yes; that is what we found in Buckinghamshire this year.

4277. Yes, I understood that was so in your case also. I gather from you that the difficulties in the way of a large development of this industry lie rather on the fiscal side?—I think so, certainly.

4278. So far as the manufacturing is concerned, it is hardly a matter that affects the small holder; he would have probably nothing to do with that, he would merely grow the beet, and it has been proved with beet on the Continent, and cane in the tropics, that the sugar industry is an ideal one for working with small holdings?—Certainly, on the co-operative system.

4279. I suppose we may take it that, supposing a reasonable price could be paid, nothing would be more remunerative as a crop?—No, provided you get a reasonable price, but I do not think you can get a reasonable price under the fiscal conditions at the present time: I mean the duty that is paid on sugar coming into this country. If that duty were demanded from the English manufacturer, I do not see how it would pay, and the manufacturer could not possibly pay enough for the beets to cover that, at least I do not think so, and I have paid a considerable amount of attention to the exact figures and details.

4280. You would be prepared to admit also, I daresay, that one of the great obstacles in the way of the sugar beet industry paying is this, that whereas in most factories your machinery works the whole year round, and keeps in good order, in the sugar factory the machinery is standing idle for nine months in the year, and consequently it becomes worn out; the wear and tear is greater during the idle months than during the working months, and it also quickly becomes obsolete and very constantly has to be replaced?—Quite so.

4281. Supposing your fiscal objection were removed, you do think that sugar-beet growing would be a useful industry so far as this country is concerned?—I think so. I think it would be as paying an industry as most.

Mr.
J. Percival.
28 May, 1907

Mr.
J. Percival.
—
28 May, 1907.

4282. (*By Lord Moreton.*) As regards the cows on the farm, of course you have acquired them by purchase?—Yes.

4283. In future, will you be able to breed your stock?—Yes, I want to do that in some cases.

4284. You would consider a good deal could be taught and learnt, I take it, as regards the dairy stock, by seeing different modes of dairying and treatment generally?—Quite so.

4285. With regard to what Mr. Lamont was saying just now about sugar-beet, would not one of the great difficulties with regard to the growth of sugar-beet, in addition to the fact so well put by Mr. Lamont about the machinery lying idle for nine months in the year, be the fact that a sugar-beet factory is an expensive factory to start?—Yes, very.

4286. And a factory that is no use starting unless you have a considerable number of acres which you can devote to the growing of beet?—That is so.

4287. I have seen the figures?—Several thousand acres probably.

4288. As regards the suitability of sugar-beet growing for the small holder, I suppose we may consider a small holder a man farming, shall we say, not more than 50 acres?—Yes.

4289. He would only be able to grow a small quantity of sugar-beet. Would you advocate that the small holder should grow sugar-beet after sugar-beet, year after year, on the same ground?—Yes. I do not think there is any objection against it.

4290. (*By Mr. Latham.*) I simply ask you whether you wish to put in the certificates showing the extraordinary difference in the milk records since you have taken the matter up and what did happen when we first took them over?—Yes, I should be pleased to send in the exact figures for the period before we dealt with the matter, and for the period afterwards if you wish it. There has been a considerable difference in the milk. It is rather a difficult question, but the milk that was supplied to the Dairy Institute was not quite up to the standard of the agreement which we had with the farmer, and he suggested that it could not be made better. I pointed out, along with Mr. Latham, the lines on which improvement could be made, as we thought, and the farmer got the milk standard up very considerably higher than he was prepared to think he could get it, and it has maintained that high standard for over a year now. It is considerably above 3 per cent. in fat, whereas formerly it went sometimes below that, although the actual standard of the agreement was 3½ per cent. I could send some of the figures at any rate for those two periods. I think the farmer did not really know exactly how to get over the difficulty, and it was only on the lines we suggested, which were based on experiments up and down the country, and abroad, that gave him the key to a distinct improvement. First of all a good breed of cow is a necessity, of course, because that is a fundamental joint, I take it; secondly the question of milking interval must be considered; and thirdly, the milking should be done carefully and the animal properly milked rather than leaving the best milk still in the cow. The quality depends on those three things rather than on the feeding. The farmer is inclined to think that the food is the most important matter, and he constantly, when complaints are made, comes and asks me how he can feed his cows better than he is feeding them to get a better standard of milk. I tell him it has practically nothing to do with the food, but that he must look to the other things; the kind of cow he keeps, the milking interval, and the method of milking, so that it is carefully done, and not hurried; with those suggestions he has worked along, and the milk quality has been very much better since that time. He has further got over the period which it was considered impossible to get over, namely, the early spring, when the milk quality naturally falls very low. We have had no trouble during the early period of this year, and formerly we had to deduct a certain amount because of the low standard, but this year we have paid him up to the full price, and he has not let the standard go down.

4291. (*By Dr. Somerville.*) I know you have now obtained a farm for the requirements of the students. May I ask whether you intend to run this farm as a demonstration centre where object-lessons will be provided for the benefit of agriculturists generally?—Yes, we hope to do that; it is being laid out practically with that idea. On all the larger grass fields I have several types of experiments going on which are designed for the assistance of farmers who like to come; and this year, at the present

moment in fact, I am arranging eight or ten acres of ground specially for that purpose and with that object.

4292. I suppose you consider it of great importance that farmers should learn to know how to carry out simple field experiments for themselves?—Yes.

4293. I suppose it is conceivable that a farmer might take up much more land than is really necessary in order to elucidate a certain point, and it is possible by putting him on right lines that he would get at his object a great deal more quickly and conveniently than he otherwise would do?—Yes. I make a point, if a farmer comes to me for any advice with regard to manuring or altering his cropping or anything of that sort, that he shall not carry out my advice over the whole field, but that he must leave a good deal of it untreated so that he can see whether my advice is right or wrong.

4294. You are duplicating local experimental stations to a large extent throughout your area?—Yes.

4295. I think you are in favour of the statistical method, that is to say, getting hold of a large number of results, and rather striking an average?—Yes. I think that is the only way to get satisfactory conclusions. Of course the whole question of how the results are to be dealt with is an important matter. It does not do to lump them altogether without considering what the nature of each experiment is. It is not wise to deal with averages indiscriminately in some cases, but I think until we get experiments of the same kind carried out in large numbers of centres, we shall not make much headway in experimenting in this country. Conclusions one year are altered in the next, especially if we have only used one or two centres, and then, if we have a larger number of centres, there are always a certain number of exceptions among them, and those exceptions, I believe, can only be cleared up when we get the average from those which are normal. We want a great deal of new information with regard to these exceptions, and I do not see how to get at the knowledge underlying these exceptions, and how they are caused, unless we have some idea of what the normal state is, and that can only be got by more extensive experiments.

4296. The average results would be more or less what you would call general principles?—Yes, I think so.

4297. You would probably recommend that farmers must not rely too much on general principles, but must, under guidance, try experiments upon each individual holding?—Yes, we must, of course, in view of the fact that there are exceptions. General principles are very dangerous, perhaps, to recommend all round.

4298. I think you took part, did you not, in framing a scheme of joint experiments?—Yes.

4299. Which was ultimately published and circulated by the Board of Agriculture?—Yes, I had something to do with it.

4300. Have you in your district put any of those experiments into practice?—Not exactly in the order in which they have been given in that scheme. Of course the ordinary five-plot scheme, which is carried out at all the centres which I have had anything to do with it, is common to most of the experiments in that scheme, but it seems to me that those recommendations were too elaborate, and because of their extraordinary extent I do not think they have been carried out satisfactorily anywhere. In my opinion it would be very much better to settle a part of one of these experiments, or two, or perhaps three of them—experiments given in the Board of Agriculture scheme—and have that done for, say, three years, and leave the rest.

4301. That scheme was really prepared in consultation with all the workers in agricultural science in the country, and was the outcome of their deliberations, and it is rather disconcerting to find that you say it is not proceeding satisfactorily. Would you suggest that a meeting should be called for its revision?—Perhaps I had better explain exactly my view. I think, to take any one single experiment on swedes or grass land, the scheme as given in that pamphlet is far too elaborate. It touches every single thing that can arise in that experiment, and secondly you never get it carried out in its entirety, and there is no agreement, so far as I can determine throughout the country, as to what part shall be carried out.

4302. I think the scheme was divided, so to speak, into so many sub-sections, and it was always possible for a man to take up any part of it and yet be co-operating on similar lines with his co-workers in different districts?—

Mr.
J. Percival.
23 May, 1907.

I think if it could be decided which part should be carried out it would be a good thing, instead of leaving each individual to carry out what part he likes, the consequence of which is that nothing is done. The scheme as it stands is an excellent one, but there is too much to carry out all at once, and I should like to see one or two small parts of it taken up and carried out on a very big scale throughout the country, and get the colleges or centres where the experiments are carried on to agree what they will do this year, say, and what they will do next year. If it is left in an open way, it seems to me the experiments are so vague, and it is so difficult to pick and choose which bit you would like to take up, the result being that very little is being done.

4303. Would you think it possible for the Board of Agriculture to bring pressure to bear on the institutions it supports with a view of securing their co-operation in such a scheme?—Yes, something of that sort, I think, would be useful, provided you could get some agreement as to what should be taken up. If the Board of Agriculture were to decide what portion should be carried out, and then, in consultation with the various local authorities, decide upon that particular thing being done, it would be useful.

4304. Do you include in your field demonstration work chemical analyses of the soil?—Up to the present we have not done so, but we have begun to do that this year. I will have no experiments where we cannot have an actual analysis of the soil, and that is what is being done in Buckinghamshire now. We have about 20 experiments going on on grass land, and the analyses are being made now.

4305. Do you think chemical analysis of soil is much guide as to what the soil requires in the shape of manure?—Yes, in many cases we can settle from the analysis at once what the soil will need. At present in a large number of cases we have no information to say what the analysis does mean; taking the experiments in the case of potash in the soil where there is a great deal of it, and where there is very little of it, we can settle at once what the soil needs, but it is the intermediate figures that we get in the analyses of soils that do not really convey anything. We want analyses of the soil and experiments carried out on the same piece of ground for several years, and then I think we should get definite information. It is with regard to these fluctuating figures that we know nothing at the present time, but I am certainly convinced in a great many cases that the analysis of the soil leads to a rational system of manuring, but it is only in a few cases that that is so, namely, in the extreme cases, where we get a very large amount or a very small amount of the active food-constituents.

4306. I gather on the whole that you would place more value on properly controlled experiments than on the analysis of the soil?—Yes, I certainly think so. I think, however, that analysis ought to be placed first, and that it ought to be the best means for getting the knowledge of what the land wants at once, without having to wait five or six years in experimenting. That is what I am trying to get at. We ought to be able, if analysis is any use whatever, to settle in a few days what a particular soil really wants, instead of waiting several years to carry out experiments on it. We cannot, however, at present do that because, as I say, we have not had the two things working together—analysis and experiment—long enough and on a large enough scale.

4307. Have you given much consideration to the provision of education of an agricultural character for the sons of farmers who are not, perhaps, exactly the type who would want the complete education which such a college as yours provides?—Yes, our short-course system, I think, meets the needs of those students.

4308. You would have them all go to Reading—you do not think it desirable to have subordinate institutions created in different centres of the country?—I do not think they all ought to come to Reading. I think a good deal can be done in the country by county instructors at various centres during the winter among farmers' sons by short courses being carried on there and then the best of them being sent to a place like Reading for the winter course, but I do not think it would be wise to send all classes of students to a place like Reading. I should certainly advise something being done in the counties by instructors appointed by the County Councils, perhaps associated or attached to some college, where they can get advantages from the college in respect of advice and so on, but the work should be carried on to some extent in the county for that particular class of individual.

4309. You do practise a sort of system of decentralisation in Dorset?—Yes, and in Buckingham.

4310. In each centre you have a man employed locally under the control of the College?—Yes.

4311. The student only gets his instruction through peripatetic classes. There are no semi-permanent properly equipped secondary agricultural schools in those places?—In Dorset they have a sort of agricultural side to one of the schools at Beaminster, and in Buckinghamshire too the instructors have been going to secondary schools occasionally, giving instruction there, but I think that is a great mistake as a rule.

4312. To a school of the grammar school type?—Yes, I think so.

4313. Do you know the school at West Lavington?—No.

4314. Do you know the one at Basing?—Yes, I have inspected that for three years.

4315. That is a school of the secondary type. Do you think that is a type of institution that might be increased with advantage?—I think it is a very useful institution, but I believe such schools are too expensive to carry out on a large scale throughout the country, and I believe you would get work almost as much good done by lecturers working at centres during the evening.

4316. Do the students, that attend the College at Reading live in licensed lodgings?—Yes, all of them.

4317. Do a considerable number of students come in the morning by train and leave in the evening?—No, very few.

4318. You do not encourage that sort of thing?—No, it is very unsatisfactory. There are always, of course, some coming from the neighbouring villages, but it is very rarely satisfactory. They are frequently somewhat irregular in attendance, and in other ways.

4319. I should like to know your opinion officially, if possible, of the prospective development of agricultural education in Oxford. Do you regard such development as likely in any way to interfere with the efficiency of the Reading College?—In the University, do you mean?

4320. In the University.—I do not think so.

4321. You do not think the development of an agricultural department in the University of Oxford would in any way cut into the agricultural work that is being done at the University College at Reading?—I do not think so in the slightest. I should imagine the type of work in both cases would be rather different.

4322. (By Mr. Medd.) How do you account for the very small number of students in the course for the certificate in agriculture—only six?—I think I mentioned last time that the certificate in agriculture is the course that is designed for farmers' sons who come during the winter, and a great many of them came to us through scholarships given by County Councils. Those scholarships were cut off a little while ago.

4323. What scholarships have you from the counties comprised within your own area?—The Hampshire people always send us two, and Dorset sends us one or two, Buckinghamshire one or two, from Oxford we have had some, and from Berkshire occasionally, but these have diminished since the County Councils have had less money to spend on them.

4324. You do admit scholars from other counties?—Yes.

4325. You have two, I think, from Gloucestershire?—Yes.

4326. They are very satisfactory students?—Very excellent students.

4327. You have also one or two from Somersetshire?—Yes.

4328. I am going to ask you a question which does not at all reflect upon Reading; the question applies equally to every collegiate centre. I put it to you because, I believe, you are more in a position to carry out the idea that is in my head probably than any other collegiate centre. Do you consider that the expenditure of this large sum at Reading, namely £3,027, on the agricultural department is justified in view of the very small number of students that you have—only 34?—I think so, considering the other work that is being done.

4329. You think that the experimental work is of sufficient value to the country at large to entitle you to this large amount of public money?—Yes, I do, certainly.

4330. Is there anything which would prevent your

Mr.
J. Percival.
28 May, 1907.

receiving more than 34 students if you could obtain them ?
—No, certainly not.

4331. Do you think that the value and utility of Reading as a collegiate centre would be largely increased if it became the head and centre of the whole agricultural education within the area comprised in your centre ?—Yes, I think so.

4332. In other words, that Hampshire, Berkshire, Dorset, and Oxford should look definitely to you as the centre ?—Yes, I think so, certainly.

4333. And it might be possible and advisable for those counties to confer and have a scheme of agricultural education from the elementary school to the centre at Reading to cover the whole area ?—Yes, I think that would be an excellent plan.

4334. To prevent waste and duplication ?—Yes.

4335. You mentioned in reply to Professor Somerville that such an institution as Basing would be too expensive to set up in every county ?—I think so, certainly.

4336. But Basing might appropriately form the intermediate agricultural school for your area ?—Yes, probably.

4337. Probably you would agree with me that your claim as a collegiate centre upon the Board of Agriculture and upon the Government generally would be increased if you were acting as such for the whole of those counties ?—Yes.

4338. I notice that those counties, out of their "whisky money," spend no less than £6,663 upon agricultural education, and I believe that the expenditure of that sum might be turned to some profitable account if it were all systematised. Probably you would agree with me there ?—I do.

4339. I do not suggest that you should exercise control over these counties, but that you should act in an advisory capacity, and that in determining their schemes they should confer with you, and each endeavour to help the other and generally to co-operate ?—Yes, I think that would be an excellent plan.

4340. You have, to some extent, initiated a movement of the kind by your external lecturers, to whom Professor Somerville referred ?—Yes.

4341. How are those lecturers appointed ?—By the County Councils on our recommendation generally.

4342. By whom are they paid ?—By the County Councils.

4343. That illustrates exactly what I mean in an initiatory state. Do you not think that the agricultural education of the country might be put upon a more satisfactory basis if the Board of Agriculture differentiated between types of colleges and graded them, that is to say, colleges of the first grade, such as yours, and colleges or schools of a second grade, such as Basing ?—Yes, possibly it might be useful.

4344. At present there is nothing to indicate to the public wherein one institution differs from another ?—No.

4345. That is to say, what the type of its curriculum may be ?—Yes.

4346. In the Report of the Board of Agriculture I see that grants from County Councils were received amounting to £225, and here in your statement of accounts it gives £825 ?—I think the £225 refers to the Horticultural Department only.

4347. Yes. I see that is so.

4348. I notice that neither Berkshire, Buckinghamshire, Dorsetshire, Hampshire, nor Oxford make any arrangement through any agricultural institution for the training of teachers ?—I think that is so.

4349. You would be prepared, perhaps, as a centre, to make similar arrangements to those which are made at Leeds or at Wye ?—Certainly.

4350. All our witnesses have said that it is of very great value to a district when teachers can receive that instruction. In regard to pupils who come to you, they come mainly from secondary schools, I suppose ?—Yes, most of them.

4351. How are they prepared ?—Most of them have had an adequate education ; some of them not.

4352. Is their arithmetic satisfactory ?—Generally speaking it is.

4353. I have had very great complaints from a corresponding institution to yours, near where I live, that the arithmetic as a rule is most defective, even in the case of students from the very best secondary schools. You have not found it so ?—No, I do not think so ; not generally.

354. In regard to the National Diploma in Agriculture,

do your students enter for it to a large extent ?—Yes, some of them, occasionally ; there is no special recommendation given to the students to enter for it, they take it mainly on their own responsibility because the course at Reading, and I imagine at all other colleges, is not finished when the examination generally begins ; it is a question of the time of the examination.

4355. In the case of a student consulting you, would you advise him to go for the London degree or the National Diploma ? The London degree is your degree, is it not ?—Yes.

4356. Which would you advise him to go for ?—It depends on the student ; they might be totally different types of student, and probably I should recommend one to go for the National Diploma and the other for the London degree ; it is merely a question of the time they could spend upon it. The London degree would take considerably more time to obtain than the National Diploma.

4357. It has been suggested here that it might be to the advantage of agricultural education to have a consultative or advisory committee in London composed of representatives of different counties and of different agricultural societies. Do you think that would be useful to act as a channel between the public at large and the central authority ?—In respect of examinations, or teaching, or what ?

4358. Agriculture generally ?—Agricultural education ?

4359. Yes, generally ?—I think it would be.

4360. To bring, shortly, the experience of one part of the country to the service of another part of the country, and so on ?—Yes.

4361. And also to bring pressure upon the Government to obtain money or assistance for particular developments ?—Yes.

4362. At present there is no channel. You were a member of the Agricultural Education Committee, were you not ?—Yes.

4363. Of course that did useful work in its time ?—Yes.

4364. (*By the Chairman.*) With regard to the expenditure of the college, you receive in fees over £1,300 ?—The gross fees, including maintenance, are £1,353 for agriculture and £1,025 for horticulture. Deducting cost of maintenance, the net tuition fees are £1,432, of which £871 is for agriculture. These items are readily obtained from the financial statements put in.

4365. Yes.—The finance is not in my hands, of course ; the Registrar and the Principal have mainly to deal with those matters.

4366. I wish to point out that when considering the net cost, the fees must be deducted from the total expenditure ?—Yes.

4367. With regard to a scheme of experiment your evidence goes to show that you think it is most important that a scheme should not be too elaborate ?—Yes, at first.

4368. And not too ambitious ?—And not too ambitious.

4369. And that the scheme should be limited to certain definite experiments, and that those experiments should then be spread over a wide area ?—Yes, that I think is the better plan.

4370. And that the experiments should also be accompanied with a careful analysis of the soils on which they are carried out ?—Yes, that is most important.

4371. I just wanted to sum up your evidence. If such a scheme were drawn up, then you yourself would be prepared to accept the guidance of the Board of Agriculture ?—Yes, certainly.

4372. You think that would be important ?—I think so.

4373. In order to have the experiments all over the country very much on the same basis ?—Yes, uniform.

4374. In order to get comparative results ?—Yes.

4375. (*By Mr. Latham.*) You made the remark just now that since 1902 the counties were offering you less scholarships than previously. Is that so ?—I think that is the case.

4376. Speaking for my own county now, are there any scholarships offered at all ?—I am not quite sure ; I do not think there are any now in agriculture.

4377. Because I am led to suppose that they are offered?—And no one takes them up.

4378. I do not think they are very widely known. Is it the fault of the College or the County Council?—It is nothing to do with the College; that is entirely a matter in the hands of the County Council whether the scholarships are offered or not and how they are advertised.

4379. If they are offered, the amount of money is independent of the grant that is made to the college?—Yes.

4380. That would be so generally?—Yes, I think it is.

4381. (*By the Chairman.*) I think I understood you as advocating that a number of instructors should be appointed in local centres in the counties?

4382. You would consider their work would be of value if they were carefully chosen?—Yes.

4383. You think that that department might be increased?—Yes, I think so in each county, but I think it would be advisable that those instructors should be, if possible, associated with some collegiate centre in order that they might get advice and instruction, and help and assistance, which they could not possibly get if they were isolated individuals working alone. I think there would be danger probably in appointing agricultural instructors all over the country in each county if those men were free to do as they pleased; there should be some sort of co-ordination about the work throughout the country, and it would be got, I think best, probably by having these instructors associated with some definite collegiate centre near them.

4384. Again, there you would attach value to the guidance of the Board of Agriculture which, of course, would have experience throughout the country?—Yes.

Mr.
J. Percival.
28 May, 1907.

Mr. FREDERICK W. KEEBLE, M.A., D.Sc., recalled and further examined.

4385. (*By Mr. Lamont.*) Mr. Martin Sutton told us that you might be able to answer some questions I was putting to him as to the possible bearing of your horticultural course on students from the Colonies. I see it stated in your little prospectus here, on page 11, that your students may in their second year specialise in preparation for work at home or in the Colonies. I think I understood from Mr. Sutton that that so far has not been extended to the tropical Colonies?—No. We have had several students who have gone to sub-tropical Colonies, the Cape particularly, and I am told that years ago there was one who went to Jamaica, but I know nothing of him.

4386. Seeing that our tropical Colonies have as yet themselves no centres for higher agricultural education, and that there is already a great and growing demand for scientifically trained agriculturists and horticulturists at what are certainly very attractive salaries, do you think that it might be held within the province of agricultural institutions here to endeavour to supply that demand?—I think so, absolutely. Speaking for horticulture, I think it is extremely practicable; I think the training given in horticulture in this country is admirably adapted for practice in the tropics, because we do such a lot of growing under glass, which is practically an imitation of tropical conditions.

4387. Your institution, and others like it, should have in your opinion, the important function of training horticulturally-minded persons in this country for taking up horticultural posts in tropical Colonies?—Yes; and I should be delighted to do anything to further that.

4388. In looking again at your prospectus, on page 25, under the heading of Fruit Garden, or the Orchard and the Shrubbery, the subjects dealt with; and again at the top of page 29 there is a list of subjects. Those seem to me exactly what would be required in a tropical colony, and it is a course which would be of very great value especially to students from the West Indies with which I am best acquainted?—We are just beginning to get the type of students who can fill such posts—people who have had a good general training, very often graduates of Cambridge—not from Oxford much, or at all, but from Cambridge who come to do practical work, and who would make, I think, the ideal sort of men for responsible posts out there.

4389. We already have in the West Indies a few men who have been at Cambridge, who have come out to the Imperial Department of Agriculture there for the purposes of research work, and as advisers, and perhaps occasionally as inspectors; but what I desire to indicate to the Committee is that the demand which I should like to see filled is not so much for men of quite such a high class as that, but for men who could take up posts as managers of estates, perhaps rather less scientifically trained?—Yes; men whom you could class as practical men.

4390. Exactly, and particularly perhaps with regard to one of your subjects, the improvement of fruit trees by breeding. In the West Indies a great deal has been done by means of subsidies and in other ways to foster the fruit industry, particularly bananas, but I think nothing has been done to improve the nature of the wild varieties of their fruits?—Practically nothing, except in the case of Ceylon.

4391. Except Ceylon?—I feel that we could do useful work in that direction, but our Department is too poor to advertise itself. We are quite unaided by any grants

from any public bodies—I think £25 is all we get—so that we have to economise; but I feel that if we could only give publicity to our Department that we should increase at a much more rapid rate; but with our resources, that at present is not possible.

4392. Seeing that in the meantime at any rate there is no immediate prospect of our having a University College for agriculture and horticulture in the West Indies, would you be willing that scholarships gained out there should be tenable in the Horticultural and Agricultural Department of the University College, Reading?—Most certainly.

4393. Do you think it would be advisable, in view of the fact that you have difficulties in going to the expense of advertising, to put your College and its course directly in touch with Sir Daniel Morris and his Imperial Department of Agriculture for the West Indies, which, as you know, has its own literature, and its own fortnightly Agricultural News in which they could call attention to your work, and in that way a certain publicity might be given to your course which at present it misses almost entirely so far as that part of your Department is concerned?—Certainly.

4394. If it were widely known in the West Indies and other tropical Colonies that your course was available to such students as I have indicated, and that scholarships would be tenable there, a very considerable number of students indeed would be only too glad to avail themselves of that course, I am sure?—Yes; and I think it would be not only doing a valuable service to the West Indies but a very valuable service at home as well, because there are so many men of trained intelligence who fail to get themselves niched on to something practical and who drift into the scholastic and other professions who would otherwise be doing valuable work of a practical kind.

4395. It would be opening up a new field both at home and abroad?—Yes. I think that branch is developing; it has got away from the trough of ten years ago. I mean people are willing now to work with their hands for example.

4396. (*By Mr. Medd.*) You have a very large fruit station, have you not?—Yes, 11 acres.

4397. How did you acquire that?—As head of the Horticultural Department I represented to the College that it was very important to have a fruit station in connection with horticulture, and so the Council consented to give us a piece of land at Shinfield, of 11 acres.

4398. How do you dispose of the produce?—We sell it locally.

4399. You have no difficulty in finding a market?—No—I think we could sell ten times as much.

4400. Do you give any instructions in packing and grading for market?—We do. I do not think we do it quite on the lines that we profess to do it in our syllabus, because practice has shown that it will not work quite like that. Any student who is going to be a grower or who is going to engage in professional horticulture cannot start after only a two years' course with us, and so either he has to come back to us for a year, when he gets training in all the practical things—he gets made a sort of foreman of the fruit station for example and has responsibility—or he has to go to some commercial firm, so that if he stays a third year with us he does get a good training in those things.

4401. You have some lady gardeners?—We have. The

Dr.
F. W. Keeble.

Dr.
F. W. Keeble.
28 May, 1907.

numbers of men and women used to be about equal, but now there are more men.

4402. What openings are there for ladies who have been with you?—We do not encourage people to come who are going to be gardeners, either ladies or men. The women who come to us for training belong to several categories. In the first place, ladies who are going to run their own gardens, people who live in the country and have a fair estate; and then there are some who already have in view occupations—for example, we supplied a seed testing institution with an expert, and one or two others of that sort, and then there are some who intended to start and have started as market gardeners for themselves, and who have succeeded. There are four women I can think of off-hand who started in pairs, making a very fair income.

4403. Sufficient to support themselves?—Yes. Of course, they had a little capital to begin with; they have not dilapidated their capital.

4404. It does offer remunerative occupation to a trained woman?—Yes, to a trained woman with brains. I think intelligence is indispensable.

4405. Quite so; trained and intelligent?—Yes. One of these people you might like to hear more of. She is an extremely intelligent woman who has had a good deal to do with agricultural work.

4406. She was with you for two years, was she not?—She was with us for two years.

4407. What size of garden has she now?—She had several acres, but now she has gone to a bigger one, I forget the size exactly. She does general utility work, poultry and bees, and that kind of thing.

4408. Have you any idea of the capital she started with?—I should think it was under £1,000.

4409. She does not depend upon taking pupils, does she?—No, she does not have any pupils.

4410. A *bona-fide* market-gardener and poultry-keeper?—Yes, and she goes in for flower work too; she has added on a speciality for flowers.

4411. Do you think she would be prepared to give evidence here? What part of England is she in?—In Hampshire. I should strongly urge that she should be asked to come here and give evidence, because she is a woman of very great intelligence, and could, I think, give information on that particular point.*

4412. What are the most important horticultural experiments that you are engaged in now?—As I explained to the Committee the other day, the term "experiment" seems to be used in various different ways; there are, first of all, these demonstrations by which you endeavour to give publicity to known or to partially known facts. Those really come under the head of "demonstrations"; our demonstrations are simply illustrations of such known facts as have their ordinary part in the usual teaching curriculum.

4413. Not research?—No. I am differentiating the one from the other. I should not call that research at all, simply demonstration. In our ordinary classes we have the influences of manures and experiments made in the breeding of plants to illustrate the recently discovered so-called Mendelian laws, and in addition to that, apart from our teaching work, the staff—when I say the staff I refer principally to myself—is engaged in its spare time in research, and during the years that I have been Director I have carried on experiments on the diseases of the potato and on the breeding of certain plants of horticultural importance, but the time available for research work in any institution of our kind in England is practically nil.

4414. Do the gardeners of the district consult you at all?—Yes; we have very frequent consultations with them. Our relations with the gardeners in the district are now very happy. In the first year or two we were regarded with suspicion, but we are now regarded with friendliness; in fact, the gardeners of the district appoint one governor of the College. I think that illustrates the relationship.

4415. Quite. Do you ever do any potato spraying for them?—No, we have never done any; we cannot afford a big sprayer, but, of course, we do our own.

4416. Have you come across any signs of the American gooseberry mildew?—Not in Berkshire.

4417. Is any investigation being carried on with regard to that in Berkshire?—No, I do not think so.

4418. They found the pest in Worcester?—Yes.

4419. And they talk of having an enquiry in Gloucestershire?—Yes, but, of course, we have not got anybody to

do useful work of that kind: again, finance cripples us completely.

4420. To take a case of this kind, do the gardeners anywhere in Berkshire, for instance, when they are perplexed with regard to any disease, ever come to you and ask you to advise them?—Well, they bring it in under their coats, so to speak, rather shamefacedly. The difficulty is that few gardeners will ever admit that there is anything wrong with what they have grown. Cases of apple canker are constantly coming in, and chrysanthemum rust, and so on.

4421. To go back to the fruit station for one moment; have you any idea of its cost?—I do not know what the purchase price was; it was about one-tenth of £1,600 or £2,000. The cost of maintenance I can tell you more accurately.

4422. I was going to ask you; does the profit on that fruit station defray the cost of maintaining it?—Certainly. The profit on that fruit station even now—it has only been planted for a year or so—more than defrays the cost of maintaining it.

4423. I mean "it" as distinct from the whole of the horticultural department?—Yes. Of course, we have grown crops of potatoes this year, for example, and other crops of early-grown vegetables and so forth, and they have certainly paid more than the cost of maintaining it.

4424. You are providing ground now for the National Sweet Pea Society, are you not?—Yes. I think this is the second year or the third year. They send all their new varieties to us to be tested, and on the result of those tests the certificates of the Society are awarded.

4425. With regard to the men students, do they have any difficulty in earning a living afterwards?—None but the very stupid. Of course, we have a certain number of people who are broken down in health—I am dealing with the least numerous and the least desirable class—and who have failed in various other occupations, and who come as a last hope to us. Naturally, we cannot very well refuse to have them, but they do not do any good after being with us. With regard to the other class, however, I have had more applications for posts, both for men and for women, than we can fill.

4426. That is very satisfactory.—I do not think we have a single student now, and we have had about a hundred all told, who is wanting a situation.

4427. Would they go as instructors or gardeners?—We have steadily discouraged training teachers. We have not got anybody who is teaching.

4428. Not lecturing?—No, I do not think we have got a single one.

4429. (By Mr. Latham.) May I ask what class of men and women you have as students?—They vary enormously—all classes.

4430. Do any students from the fruit-growing districts come to you?—No. We have not had a single student from Evesham, for example.

4431. Have you ever given any lectures in those centres?—As I mentioned before, Oxford is the only county which gives us a grant. That is a grant of £25, and for that some £40 worth of lectures had to be given in the county; we did a certain amount of going about in Oxfordshire in villages lecturing, giving single lectures or couples of lectures, and then in addition to that Mr. Foster, who is the instructor in practical horticulture, goes about a good deal to gardeners' associations. There is a very powerful one in Reading, and that is affiliated with a number of others and we both of us lecture to those associations now and again.

4432. Your efforts are sadly crippled for want of funds?—Yes, except from the point of view of the bare teaching.—In the way of discovering anything by way of research there is neither time nor money.

4433. If your funds were larger you could do larger work?—Yes, with, say, another £2,000 a year one could do a very great deal—things one could guarantee we could get done, and which want to be done.

4434. In answer to Mr. Medd you said your teaching in packing and grading is rather different from what it says in the book. What is your teaching in regard to that?—I think in this little book we undertake to make it a part of our two years' course, but in point of fact we do very little in the training of detailed packing and so forth in that two years' course. We find there is too much of the elementary basic sort of stuff to be learnt, and we leave

* The lady referred to subsequently gave evidence (see p. 355).

the other to a third year; and of course, if students do not stay a third year, they do not learn it.

4435. Do you know anything of Swanley?—Only by repute.

4436. Do you know that there they teach grading and packing and all the different things?—Of course the students see it done every day at our college, because we have to do the work, but they do not learn the detail.

4437. You say your students see it done, but at Swanley they actually do it themselves?—Yes, but I do not believe in their doing that until they have learnt the more important things—firstly elementary science, and secondly to be able to grow the different plants. Grading and packing is largely a matter of business instinct. Once they have been put in the way of it, if they have wits they can do it even if they have never done the actual work themselves.

4438. I suppose, as a matter of fact, you know that the fruit sent over from abroad is always packed very much better than fruit is packed in England?—No, I do not think that is so at all now. I think we have learnt our lesson, and I think we pack our fruit very well now.

4439. I do not know. I think if you were to go to Covent Garden and see how some of it is packed you might think otherwise.—I was referring to what we ourselves do, and when one has once realised the importance of packing and seen it done one can soon learn how to do it.

4440. How many of your students stay a third year?—I think at the present moment we have four out of a total of 12 or 14. Of course they are not by any manner of means all going to be in that particular line of fruit-growers, and four would be a very large percentage, because many of them are not going to do anything at all in connection with fruit, but are going to work on entirely other lines—nurseries for example.

4441. Have you a small percentage who are likely to become fruit-growers?—Not a small percentage, because, of course, our total number at present is only a little over 30.

4442. Do you keep any record of students after they have left you?—Yes, we have a pretty good record. We gave that to the Committee last time.

4443 (*By the Chairman.*) Do you send out any instructors to local centres?—No.

4444. All the teaching is given at Reading?—Yes; with the exception of occasional lectures to which I have just referred, all the teaching is given at Reading.

4445. Are those occasional lectures well attended?—The attendance varies a good deal; sometimes there are a good many, and sometimes there are only a few. It varies very much.

4446. By whom are they attended?—By the right sort of people—by the gardening class and people interested in allotments and so forth.

4447. Principally by gardeners and the owners of small allotments?—Yes.

4448. When orchards are being laid out do they come to you and consult you as to how to lay them out?—No; they generally lay them out first, and when they have failed they come and ask us why they do not work. We have renovated several orchards, but never laid any out.

4449. You would be quite prepared to give advice in that direction if asked?—Yes. When we started, I might say, I thought we should probably be very frequently asked for advice on that point, but one finds that people do not usually ask until they are in trouble.

4450. To what do you attribute that?—Well, to Englishness, I think.

Dr.
F. W. Keeble.
—
28 May, 1907.

Mr. RICHARD P. WARD, called and examined.

4451. (*By the Chairman.*) You are Director of Education to the Cheshire County Council?—Yes.

4452. You are prepared to give the Committee some information with regard to the establishment by the Cheshire County Council of the Dairy Institute at Worleston as a Dairy School?—Yes. The Dairy Institute at Worleston was established prior to the commencement of the County Council's work. It was established originally in 1886, that is, I think, before the date of the Paget Committee, and it originated somewhat in this way: Several gentlemen and farmers interested in cheese-making and agricultural work formed themselves into an association and issued some shares, and got hold of a farmer who was willing to let them have the use of his premises for dairy teaching on condition that they bought his milk in the morning and evening. They did that, and also bought milk from other people around at the ordinary market prices at which it could be obtained, and then they placed there a competent person to give instruction in cheese-making, and took in persons who wished to have information given to them in regard to cheese-making and dairy work generally. That went on from 1886 up to 1891, when the County Councils began their work with the money that was voted to them under the Technical Instruction Act. Then the Worleston Committee or Association approached the County Council and asked them to take over their work at Worleston, as they would have better means at their disposal for doing it, and be able to develop it to a very considerable extent. The County Council was prepared to do so, or rather I should say it was prepared to do it in conjunction with the Cheshire Chamber of Agriculture. The estimate that was given to the County Council at that time was that it would cost something like £1,500 in order to carry out the scheme as then set forth, and the County Council offered to bear the cost to the extent of £1,000 provided the Chamber of Agriculture would find the other £500. That was the commencement. In 1891 the tenant who held the farm at Worleston resigned, and it was then thought best that the County Council should take the farm from the owner, Colonel Cotton-Jodrell, and for the county itself to stock the farm and work the place, and make such alterations as were necessary for the successful carrying out of dairy instruction. Colonel Cotton-Jodrell was quite willing to fall in with

this view, and he let the farm to the County Council on a 20 years' lease, and he undertook to make very considerable additions to the house in the shape of new dairies and new cheese-rooms, and also converting the house into a condition that pupils could be taken there into residence. When we began to look into the matter as to what this would cost, it was found that to do these things would involve a much larger sum than Colonel Cotton-Jodrell was prepared to spend, and ultimately an arrangement was made between him and the County Council that he should spend £750, and that for the rest of the money that was required for these developments he should be paid interest at the rate of 5 per cent., and that such amount be added to the rent that was given for the place. That was the arrangement made by the County Council with Colonel Cotton-Jodrell, and that has continued from March, 1892, up to the present time. During these years I may say that the County Council has made very considerable alterations and additions to what were first carried out in the shape of putting up additional buildings, and Colonel Cotton-Jodrell himself has also renovated completely all the cowhouses and shippens so as to make them more of a modern kind than was the case originally. The County Council has stocked the farm, and very much improved it. When we took it I think there were about 38 milking cows. At the present time we have 56 cows milking on the same farm, besides a considerable quantity of young stock. It has been found necessary also during these 15 or 16 years to considerably enlarge the size of the dairies; the cheese-making dairy has been enlarged and the butter-making dairy has been added to. That, I think, is information in regard to the establishment of the place.

4453. Do you do any actual breeding at the farm?—We do not do much cattle-breeding there beyond simply saving the best of our calves each year, and gradually bringing them into the stock when they come to two years old or rather more. We only keep the very best of the calves.

4454. Is there a cream factory there?—No, there is no cream factory: we simply deal with the milk that is produced on the farm, and we turn the largest portion of the milk into cheese. We also make a sufficient quantity of butter to give the students a practical illustration of the work which they have to carry out, but attach the greatest importance to cheese-making.

Mr.
R. P. Ward.
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4452a

Mr.
R. P. Ward.
—
28 May, 1907.

4455. (*By Lord Belper.*) Do you purchase any milk ?—Not at the present time. We have at times done so. A few years ago we purchased milk from the farmers around at the same price that they could get for it by sending it to the milk factory four or five miles away, but for the last few years we have produced sufficient for our own purposes, and not purchased any.

4456. (*By the Chairman.*) What is the staff of instructors at the school ?—We have a Lady Principal, who is responsible for the whole of the dairy instruction, and she has a well-qualified assistant, and from time to time we send a member of our lecturing staff to the County Council to give special instruction—what I may call instruction in the chemistry of dairying.

4457. Is there a chemical laboratory at the school ?—Yes, we have built a laboratory, not a very well-equipped one, but a laboratory sufficiently good for the purpose of what we want to illustrate there.

4458. Is there any research carried out at the school ?—No ; I should not say that there is any research work carried out at the present time—not in the strict meaning of the word “research.”

4459. What is the main aim of the school ?—The main aim of the school is to give good instruction in the making of Cheshire cheese and also of butter.

4460. To farmers' sons ?—The students are restricted entirely to women at the present time. When we first established the place we had the house arranged in a dual way, so that we could take both male and female students, but it was found that did not answer, and consequently we restricted ourselves entirely to female students. Sometimes, I may say, we do get an application from a male to come to take instruction there, and under such circumstances we obtain lodgings for him in an adjacent house, so that he simply comes to the Institution to receive instruction in dairy work ; but in the county of Cheshire almost the whole of the dairy work is done by females. It is a very rare thing to find a male who does any dairy work, and consequently the applications for dairy work from males are very few indeed.

4461. Are your women students all resident at the farm ?—The majority of them are ; indeed, almost the whole.

4462. Where do the others go—are there lodgings for them ?—There are some students who drive in each morning and home again at night.

4463. Are they daughters of farmers who attend your school ?—The majority of them are daughters of farmers. I should say that 80 to 85 per cent. of them would be daughters of farmers ; but we do not restrict ourselves to daughters of farmers. We have had students from various other classes, and some of the very best students have not been farmers' daughters at all.

4464. But have come from other classes ?—Yes. I will illustrate my meaning : sometimes perhaps a doctor or a professional man may die and leave his family very poorly off, and some of those daughters, in search for a means of living, may wish to take up dairy work in order to qualify themselves for dairy teaching, and so on. We have had several cases where persons of that kind have come to us, and they have not had the slightest knowledge of dairy work when they have come, but have made splendid students—some of the very best students that we have had.

4465. What is their career afterwards when they leave you ?—One or two of them, at the present time, are instructors in dairy work in other counties in England, and one of them, that I can call to mind, is the head of a dairy establishment in South Africa ; another one of that class is I think, at Cairo doing dairy work there. Then again some of this very same class have gone out into the county to manage dairies for persons, and in one or two cases they have married farmers.

4466. You do not give any instructions to dairymaids themselves, do you ?—Yes, we do. It is a very common thing, indeed, for gentlemen and ladies, who have small dairies, to send their dairymaids for a few days to get special instruction—probably in butter making.

4467. Do they attend different courses from the courses that are attended by the daughters of farmers—the 85 per cent. that you mentioned ?—No, there is no difference in the course except that it is for a shorter time. They come for a special purpose, and they only stay until they have got that purpose served.

4468. They were not included in the 85 per cent. you gave us as being the daughters of farmers ?—No.

4469. That is a separate class, as it were ?—Yes.

4470. How many of them are there of that class ?—I can best tell you, perhaps, by giving you the number of students of last year, and you can see in what classes they come. I see that during the year from the 1st April, 1906, to the 31st March, 1907, we had at the Institute altogether 73 pupils ; of those two were there for 36 weeks. Those would be students who wanted to prepare for going up to take the examination of the National Diploma ; they stay there a considerable time to prepare for that. Then we had two who remained for 30 weeks ; 33 who remained for 15 weeks. Those 33 would all be persons holding scholarships granted by the Cheshire County Council. Each person who holds one of our scholarships is compelled to remain for 15 weeks, because we consider that they could not get sufficient instruction in cheese making and butter making in a less period than 15 weeks. There were eight persons who stayed for four weeks ; eight who stayed for three weeks ; four for a fortnight ; 10 came for one week, one came for three days, and five came for one day. Those persons who came for the one week or the three days or the one day would be persons resident in different parts of the county who came to take up some special work, most probably working in butter making, or they might be wives of farmers who had met with some difficulty in their cheese making, and had come in order to get special instruction on some particular point. We have a great many who come in that way. A farmer's wife probably finds that her cheese is not turning out as it ought to do ; she does not quite see the reason why, and then she comes to the Dairy Institute for one day or two days, and gets to know from the Dairy Instructor the particular point on which she is wrong in her dairy work, and then she is able to go back and put the thing right.

4471. What do you consider the length of the normal course at your school ?—The length of the normal course is 15 weeks.

4472. Are there some who return after having attended for 15 weeks, for a longer course ?—There are a few. We grant scholarships for 15 weeks, and at the end of 15 weeks we hold an examination both theoretical and practical. Each student has to make a cheese under the eye of the examiner, and that cheese is put on one side until it is ripe, then it is examined by a cheese factor who tests it for its value, and the marks for that and for the examination previously are put together, and in that way the qualifications of a student are obtained. Sometimes we find that some of these students who have held their scholarships for 15 weeks are not so proficient at the end of the time as we could wish, and some of them will then, probably, stay on longer and pay for themselves.

4473. Have you some who have come for 15 weeks who also pay ?—Yes.

4474. From other counties ?—Yes. At the present time we have some, but not many, from other counties. Most of the counties around have now got their own dairy schools. When we first began we had a considerable number from other counties, but now we have not got a large number, only a sprinkling.

4475. It is mainly for Cheshire ?—Mainly for Cheshire.

4476. What is the total cost to the county of carrying on the Institute ?—The cost has been various in the different years. I can give you the exact cost last year ; that will perhaps serve the purpose. It cost the county last year £805.

4477. (*By Lord Belper.*) Do you mean the net cost to the county or the total cost ?—That is the total cost to the county—the total expenditure on the Dairy Institute last year was £3,435, and then the fees, and the cheese and butter, and milk, and cattle and pigs, and other things sold came to £2,630, and the balance was made up by the County Council.

4478. That was £805 ?—£805, but I should say that is rather an unusual amount, because last year we took 20 acres additional land, and we had to purchase additional stock, which is included in that £805.

4479. (*By the Chairman.*) That you would consider working capital ?—Yes. You might consider the Institute usually costs the county about £500 to £600 a year.

4480. (*By Lord Belper.*) The average net cost per annum that the county has to provide is about £500 a year ?—Yes. Last year was a special year on account of our having to purchase additional stock.

4481. (*By the Chairman.*) That includes the scholarships ?—No, that does not include the scholarships. The scholarships are paid for out of a different fund—the scholarship fund. We paid for scholarships last year £224.

Mr.
R. P. Ward.
28 May, 1907.

4482. That is a separate fund?—That is a separate fund.

4483. Then you have peripatetic classes in dairy work?—Yes, we have some peripatetic classes in the eastern side of the county, of which Macclesfield is the centre.

4484. Who undertakes those?—The teacher for those classes is Mrs. Blackshaw, a farmer's wife, and she has taken the classes from the very beginning—from 1891.

4485. Are fees paid for those classes?—No. There is no fee paid by the students who attend the peripatetic classes.

4486. The county takes the whole cost of those?—Yes, the whole cost of them. The peripatetic classes consist of cheese making and butter making—in the winter, butter making alone, and in the summer time both cheese and butter making. These are held in farmhouses. We have an arrangement with the farmer, and he provides all the milk necessary for the cheese making or butter making, and he keeps the produce and we pay him a couple of guineas for the use of his rooms and utensils. We undertake further that if any of the cheese or butter that the students make at these classes is spoiled, we will bear the loss; but in all the years from 1891 until now we have never been called upon to pay a shilling.

4487. Can you give the Committee any information on other matters affecting agricultural education in Cheshire?—Yes. Would you like me to give some further information as to the quantity of cheese and butter that is made at the Dairy Institute, to give you an idea of the amount of work which the students carry out?

4488. Perhaps you could hand us that statement, and it could be included in your evidence. I do not want to trouble you too much at the moment?—I can give it you in a moment or two.

4489. By all means?—I see last year we made about 11 tons of cheese. That cheese sold for £768; that is practically speaking an average of about 70s. a cwt., but last year the price of cheese was good, more so than usual. I think it speaks very well indeed for the students when I tell you that the whole of this cheese is made by the students—that they have to take part in the whole of the work themselves from beginning to end, and do all the cleaning of the dairy and the cleaning of the vessels and everything, and yet we are able to sell the cheese at as high a price as most farmers can make for their cheese.

4490. Will you give us the average for three years, perhaps that would be the better way?—I have not got the average for three years. Last year was, perhaps, rather higher than usual.

4491. You can perhaps send us a statement to that effect, giving the average for three years?—Yes.*

4492. Your school is thoroughly appreciated by the farmers?—Yes, it is very much appreciated. I can prove that in a very simple way. We have a great many more applications from persons to come to the school than we can find room for, especially in the spring of the year.

4493. You make a selection do you?—Yes.

4494. By competitive examination?—No, not exactly by competitive examination. We ask the candidates for scholarships to come before a Sub-Committee consisting of three persons and myself. We question them closely about their past life, but more particularly as to what their object is in coming to the Institute. If we find that their object is to make themselves into dairymaids in order to earn a living, or to become teachers of dairy work, or for the purpose of preparing themselves for being married to farmers, we look upon those applicants as being suitable students, and give such the preference.

4495. Some of your students afterwards undertake instruction in dairying?—They do; but the majority of them are now managing dairies for large farmers, and we have more applications for students to go out to manage dairies, or to become assistants in managing dairies, than we can supply.

4496. Do some of them go to the Colonies?—Yes, some of them have gone to the Colonies. We tell the students when they come in that unless their work and conduct is such that we can approve, we shall not recommend them for situations, because we feel it is a great responsibility for us to recommend a student to a gentleman, or to anyone, to manage his dairy.

4497. Is your school connected with the National Dairy Institute?—In no way, except that we sometimes send students up for its diplomas.

4498. I mean the British Dairy Institute at Reading—are you in any way connected with them?—No, not in any way.

4499. Do you send your pupils up to be examined for the National Diploma?—Occasionally we have a pupil who wants to go, but we do not profess to train them for that. There are several reasons why our students do not take up that Diploma, but now and again we have one or two that wish to do so, and under those circumstances we give them the training that is necessary, and we send them up.

4500. They then require some additional training?—Yes. In that case they require additional training, and also a considerable amount of theoretical knowledge in agriculture and chemistry.

4501. Where do they obtain that?—We have to make provision by sending a special lecturer to give them information of that kind.

4502. You undertake that?—Yes.

4503. You do not send them to Reading or to such like institutions for that purpose?—No. Another reason why our students do not care to go up for the National Diploma is that perhaps they want to manage their father's dairies, or to be married to a farmer, and they have no wish to become teachers. It is in the case of those who wish to become teachers that it is to their interest to get the National Diploma in Dairying. Another reason probably is that we at Worleston only go in for Cheshire cheese-making, not for other kinds of cheeses, and for the National Diploma you have to know how to make other kinds of cheese besides Cheshire cheese.

4504. (*By Lord Belper*) Do you teach nothing but Cheshire cheese-making?—Now and again we make a little Stilton, but we do not profess to teach the making of all other kinds of cheese.

4505. Students going abroad or students resident in other counties would require further instruction than you give them?—Yes, we only go in for Cheshire cheese. Our farmers consider that pays better than any other cheese, and as our Institution is for the use of the county, we do not consider it desirable to take up other kinds of cheese-making. We encourage our students to take situations in large farmhouses as what I may call "improvers"; that is, where the wife has a family to bring up the farmer is very glad to have somebody who can help his wife. Many of them go as improvers and are there for a year or so, and then they are able to take situations on their own account afterwards.

4506. There was one point you mentioned, and I was rather surprised at the way you put it. I am not quite sure that you intended it. You said that there was no spoilt cheese or butter at all, although it was all made by the students. Surely in any instruction there must be a certain amount of stuff which is not first-class produce, owing to its having been made by students who, in the process of learning their work, cannot have thoroughly acquired the requisite knowledge?—We have not had any spoiled. There may have been just an odd cheese now and again, but it is a very, very rare thing.

4507. I am only asking the question because I am thoroughly conversant with one of the largest dairy colleges where the instruction is of a higher class than that given at your Institute, and there there is a considerable amount of produce made which would not command the highest price in the market, because it has been made in the course of instruction by the students, who are perhaps not at the time entirely conversant with the work. Of course a good deal of it is consumed on the place itself by the students, but surely there must be in any place of instruction, unless the things are reconstructed afterwards, a good deal of stuff made that is not of the highest class?—I must say there is not any large amount spoilt in that way, but we do not put a batch of new students to do the work entirely by themselves to begin with; there are always some students there who have had some experience, and the new ones go in along with the experienced ones for some little time, and the cheese-maker herself is standing by and watching these things most carefully.

4508. I thought you said they were made entirely by students themselves?—So they are, under the guidance and direction of the teacher.

* The Witness subsequently forwarded a statement to the Secretary showing that the average prices obtained for cheese made at the Institute were: 1904-5, 55s.; 1905-6, 63s.; 1906-7, 69-9s. per cwt. of 121 lbs. (See Question 4546.)

Mr.
R. P. Ward.
28 May, 1907.

4509. Are the students, when their instruction first begins, so competent that they can make cheeses which command the higher prices in the market? What do they learn in the course of their instruction?—I do not say the students alone when they first begin.

4510. That is what I gathered from your remark?—The students who first come in are put along with someone who does know something about it, and the teacher is always present to direct.

4511. Then it is not entirely made by the students?—They are made by the students as a body—there are three or four students in one batch, and the teacher supervising.

4512. You lay yourself out for the instruction of girls and women in your own county who want to learn dairying?—Yes.

4513. You do not encourage many students from outside the county?—No, we do not encourage them, but we have them regularly coming, a sprinkling of them; we do not, however, lay ourselves out specially to invite them to come.

4514. Do they pay higher fees?—Students from our own county pay 10s. a week, and those from other counties £1.

4515. Students in your own county are offered scholarships?—Yes. The County Council pays the fees of those who have got scholarships.

4516. Do they pay nothing?—Nothing.

4517. Not even for their keep?—No.

4518. The scholarships pay for the whole of their instruction and their board and lodging?—They are at no expense whatever to themselves.

4519. What would the outside students pay?—10s. a week; that covers everything.

4520. That will not cover their instruction and their board and lodging?—That is all we charge them; the rest is made up out of the County Council money; we charge them what we think covers their board.

4521. Then you do not instruct outside students for a lower fee than they cost you?—We charge them such a fee as we think simply covers their board, that is 10s. a week.

4522. What is your object in allowing students from other counties to have their instruction and their board and lodging at lower than cost price?—I do not think that we do for students from other counties; we charge students from other counties £1 a week.

4523. I was asking you about other counties, and I understood you to say 10s.?—I thought you meant outside our scholarship students.

4524. No, outside the county I meant?—Outside the county we charge students £1 a week.

4525. That explains it; £1, you think, about covers the cost?—We think so, about.

4526. Not more, certainly?—No.

4527. (By Mr. Latham.) What is the size of the farm?—163 acres, and it is all grass.

4528. You keep these 56 cows exclusively for the dairy?—Exclusively for that purpose.

4529. The Chairman asked you if there was a different course for dairymaids from that for people in a higher sphere. There is only one course for dairy work, I think?—That is all.

4530. No matter who they are?—No matter who they are; they are all treated alike when they come there; no distinction is made.

4531. I should like a little more information with regard to these pupils. What are the 36-weeks' pupils supposed to learn during the 36 weeks?—Those who were there for 36 weeks were, perhaps, when they came, people who had not the slightest knowledge of cheese-making or dairy work at all, and consequently stayed on in order to make themselves as efficient as possible.

4532. I take it the scholarship-holders are very much in the same position?—No; a great many of them are from farmhouses, and probably know something about the work.

4533. They have been taught at home?—Yes, they have been taught something about it at home.

4534. At what age do they come to you?—No one less than 15, but as a general rule the students are from 18 to 19 years of age, sometimes much older.

4535. The scholarship pupils are pupils who have learnt

something at home in their own fathers' dairies?—Yes, they often know something about it. I should state that a great many farmers in the country go in for selling milk at the present time, and we have a good many students who come from homes where they are able to milk, and they know something about milking, but they do not know anything about butter-making or cheese-making, because the milk is sent away from their houses.

4536. What is the value of these scholarships? I think you told us that £224 were received for scholarships. What is the individual value of them?—We pay 10s. a week for each scholarship-holder at the Dairy Institute.

4537. What do you consider the scholarship that the County Council offers to the student is worth?—We pay the 10s. a week, and then any balance that is required for meeting the cost of the Institute would be met by the county in addition.

4538. I quite understand that; but I want to know what you consider is the value of the scholarship to the student?—At least £1 a week.

4539. They are there for 15 weeks?—Yes, 15 weeks, each of them.

4540. So that it would be £15, and that includes the education and the keep?—Certainly.

4541. Is 15 weeks sufficient time in which to teach cheese-making properly?—Certainly; if a girl is sharp and intelligent, and has some little knowledge of it, she will make a good dairymaid in 15 weeks.

4542. But do they know something about it before they come?—When I speak of some little knowledge of it, I mean a girl who comes from a farmhouse and knows what milk is, and probably is able to milk, and has seen cheese made, though she may not have taken any great part in it herself. But we have had cases where girls have been able to make cheese in 15 weeks who have had no previous knowledge.

4543. I was much struck by Lord Belper's question about the produce, and I cannot quite imagine how every bit of the produce can be good?—We have never had any bad produce, and we do not consume in the house, in the way suggested, any bad produce.

4544. I think I may fairly take it for granted that you never let them make anything that you are likely to dispose of till they are fairly efficient?—There is always some fairly efficient one who has got the main control of it. In teaching cheese-making you have a vat, and you have one of the students in charge of the vat, and the others are brought into the way of doing it gradually, and by careful management we prevent any loss; of course the teacher is always there to direct and take part if required.

4545. Up to a certain point they are eye-witnesses rather than workers?—Not exactly eye-witnesses. There are lots of things they can do without being made responsible for the whole process.

4546. I should be very glad if you could give us a little idea of about what your prices were for your produce three years ago?—I could not give the prices three years ago. I have not prepared myself for that, but I have got them for last year, and the lowest price was 55s. a cwt. But our cwts. are 121 lbs., remember. The highest price we sold at last year was 80s., and that works out at 69-9s. per cwt. for the year. I want to point out that last year was a very good year for cheese, and the lowest price in other years has come below 55s.

4547. Now, with regard to these shorter times, you say five for one and ten for another?—Yes.

4548. What is the principal education of these people?—These would be mainly people who have met with some difficulty in regard to the making of cheese at their own homes.

4549. What kind of difficulty would that be?—Sometimes they find their cheese turns out what we call weak cheese, and they cannot quite understand the reason of it, so they come to get information from the chief dairy instructor as to what has caused this in their cheese. Probably they find sometimes that they are making their cheese too acid, or various other matters may arise in the making of it, and they come here for a short time to get information and watch the work done, and then they are able to find out what the difficulty is, and go back again with the information they get.

4550. Sometimes they are troubled with flavour, are they not?—Yes, sometimes.

4551. Is not that time of two or three days much too short to get any good in?—They come at their own option,

Mr.
R. P. Ward.
28 May. 1907.

and stay till they think they have mastered the difficulties. We do not lay down any definite rule that they shall stop so many days.

4552. Have you any way of testing for the purpose of finding out the cause of any flavour or taint?—No, we are not able to follow that out in regard to these people who come to us.

4553. Where else do they go to get a remedy or information?—I do not know any other place excepting that they come to us. There have been a few instances where a person has had a difficulty in the dairy and she has asked us to send our own dairy instructor to manage her dairy for a few days, and we have done that.

4554. Has that been found efficient?—It has generally put it right.

4555. Does your County Council keep up its grant?—Yes.

4556. I take it that the chief agricultural industry of Cheshire is almost entirely the industry of cheese-making?—It is the most important industry in the county. New milk has increased to a very large extent in the last few years.

4557. But still they do send a lot of milk to London?—They send a lot of milk to London and to Manchester and Liverpool.

4558. Do you still continue the dairy school?—Yes.

4559. The itinerant dairy school?—The peripatetic classes, do you mean?

4560. Yes.—Yes, we have those classes, but we are not holding those to so large an extent as we did a few years ago.

4561. Why, may I ask?—We did not think there was such a great necessity for them.

4562. I rather took it, in reading the book, that they were feeders to your school?—They are to some extent. The persons who come to a peripatetic class for six or eight days often become students and come to our school afterwards.

4563. Are they principally farmers' daughters?—Mainly so.

4564. The book says that 14 remained at one centre eight days?—Yes.

4565. And some remained six days, and some four days?—Yes.

4566. What do you say about the eight days' instruction?—The eight days are for butter-making in winter when people can come up. The four-days' people are for cheese-making in the summer months, when it is difficult to get them together.

4567. That is very small instruction, is it not?—It is not instruction qualified to give a person complete knowledge of cheese-making, but those are only persons wanting information upon some particular point.

4568. They are really more for luxuries, are they not?—Mrs. Blackshaw, in conducting the class, gives them short addresses upon how to deal with the matter.

4569. But there is no cheese-making taught, is there?—The cheeses are actually made.

4570. But not by the students?—No, they are made by Mrs. Blackshaw, and these people stand round and listen and give assistance, and she explains the details to them.

4571. That explains, I think, why you have no bad cheese, because the teachers make it in the earlier part of the time?—Yes, probably it may.

4572. (By Lord Moreton.) Do you have an open examination at the end of the course at your school?—Yes.

4573. Do you give anything in the nature of a certificate or anything of that kind?—We give a certificate, which is simply a certificate stating that the person has been in attendance for a certain time, and has passed the examination held there. We do not issue a diploma.

4574. But you do give a paper?—It is an acknowledgment of their having attended.

4575. Do you give any instruction in milking?—Yes. All the students are asked to take their share in milking. When people come to us for scholarships we ask them, "Are you able to milk, and are you prepared to take your share in milking when you go to the dairy?" and if they answer "Yes," they take their share.

4576. I take it the prices you have given are the prices of the produce manufactured at your institution. Could you add to that the market price for the same period, so that we might compare the market price with yours?—I am afraid it would be difficult for me to do that, but we get the highest market price.

4577. But we should have liked to see how much higher your price was than the market price?—I will try to find out the price at the time as well as I can.

4578. You will agree that would add very much to the interest of the table?—Yes.*

4579. As regards the National Diploma in Dairying, I take it your teaching is practically for Cheshire and Cheshire methods only?—Our aim is for Cheshire methods.

4580. Therefore, you have not really very much experience of the working of the National Diploma Examination, and have not sent up many students?—Not a large number. Some years we send two or three, and some years none at all. It depends on whether the students want to take the Diploma or not.

4581. Do you consider that some such examination is of value?—The National Diploma?

4582. I do not say that, but an examination of such a character as that—is it of value to the country at large?—I should say it all depends on the way it is carried out.

4583. Are you prepared to answer a few questions on what is put down earlier in the abstract about other matters as to agricultural education in Cheshire?—Yes.

4584. Will you tell me if there have been many peripatetic classes in other subjects besides dairying?—Do you mean throughout the county?

4585. Yes, in other subjects.—Yes, we have a great number of evening classes of different kinds, but most of the subjects that are taken up do not touch upon dairy work.

4586. What do they touch upon then?—Instruction in ordinary subjects.

4587. Instruction in what?—In book-keeping, and similar subjects.

4588. Agricultural book-keeping?—No, there are not many evening classes that deal with agricultural subjects—there are very few indeed. We find it almost an impossibility to work up an interest in rural districts in subjects relating to agriculture.

4589. Have you tried to do anything as regards teaching farriery and improving the farriery of the district?—Not much.

4590. We have been told that in many districts in England very considerable work has been done in that way?—We have not done much in farriery in Cheshire.

4591. Have you done anything in veterinary science?—We have done nothing in veterinary work except giving lectures at places where they have applied for them.

4592. Do you have many applications?—Not many. Of course at our agricultural school at Holmes Chapel we give systematic instruction in regard to veterinary work. The applications we have had for veterinary lectures have not been numerous.

4593. (By Mr. Medd.) I daresay the Worleston school is subsidised to some extent by the Board of Education?—Never until the last year. During that year the classes have been in connection with the Board of Education, and we got a grant.

4594. What was the amount of the grant?—£78 10s.

4595. Then I suppose the Board of Education inspect you?—Their inspectors come.

4596. Then I suppose you have a double inspection?—Yes.

4597. It would probably be simpler if you had a larger grant from the Board of Agriculture, and only one inspection?—I should like to say you can hardly call it a larger grant, because we have never had any at all from the Board of Agriculture.

4598. Lord Moreton referred to the agricultural education in the county of Cheshire. You expend a very considerable amount of the "whisky money" upon it, do you not?—Yes, we expend a large amount of money upon agricultural education.

4599. More than a quarter of the total amount?—A very large amount indeed.

* The Witness subsequently forwarded to the Secretary a statement, which he had received from a large dealer in Cheshire cheese, showing that the wholesale average prices were: 1905-6, 58-9s.; 1906-7, 67s. The Witness was unable to obtain the prices for 1904-5.

Mr.
R. P. Ward.
—
28 May, 1907.

4600. Last year it was more than one-third. The total amount is £16,451, and out of that you spent about £6,237 ?—Yes.

4601. The major part of that goes to Holmes Chapel ?—Yes.

4602. Last year you incurred considerable capital expenditure in increasing your numbers ?—Yes.

4603. In fact the appreciation of Holmes Chapel has steadily grown ?—Yes.

4604. The character of the instruction that they get under Mr. Young is somewhat different from what it was even a few years ago, is it not ?—Yes, that is so.

4605. Do you find the present type of instruction is more appreciated by the farmers than what you used to offer there ?—Yes, I think so.

4606. Now in regard to the training of teachers in Cheshire, what is the system of training them at half-a-dozen centres—what do you do ?—That is simply giving them lessons in nature study to enable them to give instruction to children in their own schools. We fix up six centres, one to be taken on each day of the week. The teachers who live within a certain radius of that centre are taken there and given a course of lectures in nature study.

4607. When are the lectures given ?—On Monday, Tuesday, Wednesday, Thursday, and Friday, in the evening, from 6 to 7 o'clock, and on Saturday, in the morning from about 10 to 11.

4608. Who gives the instruction ?—We have a special lecturer for that purpose.

4609. There is no cost to the teachers, is there ?—Each teacher pays a fee of 10s.

4610. That is new, is it not ?—That has been the rule for two or perhaps three years.

4611. But you used to provide free instruction when you had it at Holmes Chapel ?—Yes, it was free altogether.

4612. You find that the demand for the instruction has so much increased that the teachers now are willing to pay for it ?—Yes, quite willing.

4613. And you have not had to close any centre from lack of pupils ?—No.

4614. Now with regard to the school gardens, do you supervise each garden, or are they run independently ?—We supervise them. The instructor in horticulture at Holmes Chapel, who is also the head gardener, has been made the chief instructor in horticulture, and it is his work to draw up a scheme of work for every place where there is a school garden, and he has an assistant who goes round regularly to give lessons.

4615. Does any proportion of that expense fall upon the managers of the individual schools ?—They have no expense at the present time under the new Act. It is paid for by the County Council.

4616. In regard to the farmers and parents, what do they think of the gardening ? Is there any dislike of it ?—I think they are rather favourable to it.

4617. The parents do not object ?—The parents do not object. We have only taken it up in this systematic way for a couple of years. Last year I think we had 15 centres, where we took school gardens. This year I believe we have somewhere about 23 or 24. I cannot give you the precise number.

4618. And they are growing ?—Yes.

4619. Of course you have one or two exceptionally good rural schools in Cheshire, such as Tilston and Bunbury ?—Yes. But they do not take school gardens. One difficulty in regard to this in Cheshire is getting land for gardens. You might as well ask a Cheshire farmer for his blood as ask him for a piece of land.

4620. Then you find the cultivation of these gardens on the common plan is better ?—Yes.

4621. That is your experience ?—Yes, decidedly, and our instructor is very strong upon this point—he thinks that having a separate plot is merely playing with the subject.

4622. Have you Saturday rambles for the teachers ?—Yes, Saturday rambles are part of the course of instruction in nature study. The complete course is about 22 or 24 lectures, and four to six rambles.

4623. Do you give any certificate at the end ?—Yes, we give a certificate for those who pass the examination at the end. It is simply a sort of acknowledgment for

attending the classes, but the teachers like to have that acknowledgment given to them.

4624. Then you may say your efforts in Cheshire in agricultural education are generally appreciated ?—I think so.

4625. The amount that the County Council is willing to give out the "whisky money" is evidence of that ?—Yes.

4626. To what should you ascribe the growth of Holmes Chapel ? Was there any particular reason why an intermediate school of that type should be established there—is there anything which led to it ?—Do you mean what can I ascribe its growing popularity to ?

4627. No, its foundation ?—We felt there was a demand for instruction of that kind for the young farmers in the county.

4628. Had you taken any steps to prepare the ground beforehand ?—Yes.

4629. What did you do ?—We had several applications from farmers' sons and others to give them instruction of that kind, and for one or two winters we held special classes at the Dairy Institute at Worleston. Those were successful, and those induced us to go a step further and establish agricultural schools. Also our lectures were pioneer work for this purpose.

4630. You did not attempt to plant a school there before finding the necessity for it ?—No. We thought there was a legitimate demand for it.

4631. You had Mr. Gordon lecturing at one time, had you not ?—Yes, and he was the first Principal of the school. I think the fact that we have more applications now coming to the school at Holmes Chapel than we can take is distinct evidence of the value which the county puts upon it ; and another point is that we established a number of scholarships tenable at the school at Holmes Chapel, and now we do not give half the number of scholarships we originally did.

4632. That is very striking ?—Yes.

4633. You can fill it up with full-paying pupils ?—Yes, we can. At the present moment we have somewhere about 45 or 46 students at Holmes Chapel, and only 18 out of those hold scholarships.

4634. Is anyone from outside the area from Cheshire represented on the governing body ?—No.

4635. That is entirely the property of your County Council is it ?—Yes.

4636. But of course you admit students from other areas on payment of a higher fee ?—Yes, and we have a number now from other counties.

4637. Do you have any scholarships from other counties tenable there ?—There is one holding a scholarship from the Staffordshire County Council.

4638. And you see no objection to that ?—No, not the slightest, so long as we have room ; but we should always give the preference to students from Cheshire.

4639. Is there any other way in which you provide agricultural education ?—I do not think we have anything special at the present time. We give lectures in different parts of the county in horticulture. These have been rather successful. But during last winter we were not able to carry them on, because our lecturer broke down in health and we had to give them up for the winter. Lectures in poultry-keeping we give to a considerable extent, and also bee-keeping.

4640. As to the evening classes you say the agricultural subjects are not popular ?—No, they are not popular. It is very difficult to get students to come to the evening classes in rural districts.

4641. Then what do you do for the girls and young women particularly ?—Wherever we can get any students to come together for any subjects we are prepared to provide for those subjects.

4642. But of course one feels that the education of the female is quite as important as the education of the male in the rural districts ?—Yes.

4643. You have a system of providing domestic science instruction, have you not ?—Yes, we have a good many classes—not often in rural districts—in such things as cookery, dress-making and laundry-work, and housewifery subjects.

4644. I thought you had some centres ?—Yes, but those are not often in the rural districts.

Mr.
R. P. Ward.
28 May. 1907.

4645. But you collect the girls out of the rural districts ?
—Yes, and we are prepared to go so far as this, that if a student lives in a district where there are no classes of the kind that she requires we will pay the railway expenses to enable him or her to go to the nearest centre where such instruction can be obtained.

4646. That is very important ?—Yes, we do that regularly.

4647. Do you get many applicants ?—Not a very large number.

4648. Are those classes held in the afternoon or the evening ?—In the evening.

4649. That is a difficulty ?—Yes, but people are not at liberty in the afternoon.

4650. They would be at teatime I should have thought ?
—But we mean after 4 o'clock in the afternoon when we speak of evening classes. There are special classes held in some cases between 2 o'clock and 4 o'clock where people could not go out in the evenings. People have a great objection to their daughters being out in the country lanes at night after dark.

4651. Undoubtedly, and there is no reason why a continuation school should not be held at any time in the day ?—Not if you can get the students together. Another difficulty in regard to getting male students in rural districts is that they have to get up very early in the morning—at 6 o'clock perhaps—and if they have been working all day, then when they come to the evening classes they are very prone to fall asleep over their work.

4652. (*By the Chairman.*) In Cheshire lectures have been given for a considerable time in various parts of the county ?
—Yes.

4653. That is lectures on agricultural subjects ?—Yes.

4654. At the expense of the county ?—Yes, at the expense of the county.

4655. Are they well attended by farmers' sons ?—We gave lectures a great deal more a few years ago than we do now, and we looked upon these lectures as a sort of pioneer work to find out the bent of the people in the different places. The lectures are differently attended in different places. In some places there were fair audiences, and in some places only poor ones.

4656. You give less lectures now than you did ten years ago ?—Yes. We have devoted more attention to these permanent schools, where students come for regular work.

4657. You consider that the object of those lectures having been pioneer work there is less necessity for them when the schools are in full work ?—Yes, that is our idea.

4658. Then would you explain a little more in detail what the organisation is for the pupils at the Worleston School who require additional knowledge to that which is given in the 15 weeks' course ? You have mentioned already that where a pupil wished to get additional knowledge you provided it, but who pays for that ?—We pay for it. If the student goes to Worleston and pays 10s. a week, then we provide all the instruction that is wanted for that purpose.

4659. But what I mean is that you have pupils who have earned their certificate at the end of the 15 weeks' course ?
—Yes.

4660. A girl pupil gets a certificate then ?—Yes.

4661. Now I will take one of your scholars who gets, therefore, her tuition free. She wishes to obtain the necessary instruction for the National Diploma, and in that case do you add to your staff for that purpose ?—The principal of the school and the assistant, both of them, hold the National Diploma, and they are capable of giving such instruction as is necessary. We also send one of our special staff to give lectures on the extra subjects that will be required, or to give assistance.

4662. One of the special staff ?—Yes.

4663. The special staff of the county ?—Yes, of our agricultural lecturers.

4664. One of those who give the lectures ?—Yes.

4665. They give that further teaching also, do they ?—Certainly. If they have held one of our scholarships for fifteen weeks and wish to remain longer they pay 10s. a week for the further period that they remain, and we provide the instruction required.

4666. The first 15 weeks are free ?—Yes, the county pays that if they hold a scholarship, and afterwards they pay for themselves.

4667. That ten shillings is not sufficient for the full

course ?—No. It represents what pays for their board. That is all that it really represents.

4668. Therefore the teaching is really given gratis ?—Quite so.

4669. Are there many who enter for that additional course ?—No.

4670. That number is very limited, is it ?—Yes.

4671. That shows that the value of the certificate after the 15 weeks' course, for all intents and purposes, is considered sufficient ?—Yes, because the majority of them want to go out as dairymaids, either to manage dairies themselves or as assistant dairymaids. It is only those who want a training to become dairy instructors or teachers at dairy schools, and the demand for them is limited, because there is not a large number of dairy schools in the kingdom. They are the ones who want to go for the National Diploma.

4672. But in regard to those who attend the 15 weeks' course, is that the class from whom dairymaids are taken ?—Yes, they nearly all go out to be dairymaids.

4673. But I thought they were farmers' daughters ?—Yes. I think probably we are not putting the same definition upon the word dairymaid. Perhaps you mean by the word dairymaid one who goes out as a sort of farm servant.

4674. Quite so.—I do not mean that by a dairymaid.

4675. That is exactly what I wanted to get at. Those who attend the 15 weeks' course are as a rule farmers' daughters who manage dairies ?—By a dairymaid I mean a person who manages a dairy. So that we have been working against each other in regard to the definition of the term.

4676. Quite so. Then those whom we shall call dairymaids in the restricted sense of the word as a rule do not attend the 15-weeks' course, but they attend a shorter course ?—We do not allow anybody to have our scholarships except they will attend the 15 weeks.

4677. But you have mentioned already in your evidence that what I call the restricted dairymaid class come for a shorter period ?—Yes, and those who come for the shorter period are probably either farmers' wives who have met some difficulty in regard to cheese-making, or dairymaids in the sense in which you are using the word—that is, a servant probably to a gentleman who keeps two or three cows, and who wants her trained to make butter and nothing but butter, and of course she can learn to do that in a week or 10 days.

4678. But the point is that the farmers' daughters who come for the 15-weeks' course manage their own dairies at the farms of their fathers ?—Yes.

4679. Or they manage dairies, I suppose, on a large scale ?—Yes.

4680. Or they might, with additional knowledge, become teachers at dairies ?—Yes, or assistants in dairies.

4681. It is probably that class ?—Yes.

4682. But still there remains, I suppose, a large class of those who earn wages as dairymaids ?—No, there is not a large class of those. There are some labourers' daughters who come in with these scholarships, and perhaps a few of those may go as dairymaids in the sense in which you are using the term, that is as a servant. But most of those who have been 15 weeks with us are sufficiently advanced to go as improvers or assistants in the dairy of a large farmhouse. They are practically servants, but at the same time they are receiving a larger salary than what they would do as servants' wages, and they are in a different position rather.

4683. Then do I understand that there is not a great opening for girls belonging to those classes with regard to the employment of dairymaids on wages ?—If they have got sufficient knowledge they account themselves as little better than an ordinary farm servant when they have been that length of time at the work.

4684. But what I mean is are those the daughters of the working classes ? You have spoken in your evidence of farmers' daughters, and I want to obtain this information: What position is obtained at the school for the daughters of the working classes ?—The daughters of the working classes are able to obtain the scholarships just the same as farmers' daughters are.

4685. I quite understand that; but you have mentioned that 80 or 85 per cent. of the students are daughters of farmers, and 15 or 20 per cent. represent other classes of the community—superior classes ?—Not altogether of

M R. P.
Ward.

28 May, 1907.

superior classes, because I am including the labourers in the 15 per cent.

4686. That leaves a very limited number of the representatives of the working classes?—Yes, a limited number.

4687. May I take it that the number of those who attend the school who belong to the working classes is a limited number?—Yes, it is a limited number. I should say that when I speak of farmers I mean every one who comes from a home where they have land and keep cows, let the farm be as small as it may. We have some, for instance, where

they do not keep more than a couple of cows or three cows and have probably eight or ten acres of land.

4688. That is a small holder?—Yes, and those I include in the term farmer.

4689. But I want to get at the question as to the distinctive working classes?—Yes.

4690. Now I understand that the number of representatives of the working classes—that is those who earn wages—at your school is limited?—Yes, that is so, it is limited.

Miss MAY CROOKE, F.R.H.S., called and examined.

Miss
M. Crooke.

4691. (By the Chairman.) You are principal of the School of Gardening at Bredons Norton?—Yes.

4692. That is near Tewkesbury?—Yes.

4693. You wish to give the Committee some evidence with regard to the employment of women who have received a thorough training in the lighter branches of agriculture?—Yes.

4694a 4694. Then perhaps you will explain what your experience has been in that respect?—If I do not go on the right lines, and do not tell you exactly what you want to know, you will, perhaps, say so, and I will act accordingly. I, myself, trained at the Reading Hostel in 1898, when in connection with Reading University College, and then I went on as Instructress in the gardens. When we started at Reading there were just 12 students, and then by the following Christmas we had increased to 24, and in 1899 there were 41 students in residence. After I had finished my training I started first with a small post in the gardens, and finally became head gardener, and gave horticultural instruction in connection with Mr. Iggulden. I left Studley in October, 1905, and started a small school of gardening for myself at Bredons Norton, Worcestershire. Following the headings which I have given as the basis of my evidence, I should like to say that for women who have received a thorough training in the lighter branches of agriculture there are plenty of openings in which, if not riches, certainly a comfortable living may be obtained. But a great deal depends on the women. No doubt a very great deal of harm has been done by incompetent women taking up posts which they have been quite incapable of filling. The reason why this has been so is that their training is quite inadequate for the work that they undertook afterwards. A woman who has not even had two years' training, or a woman who has not even lived in the country, but has come straight from the town, and is entirely a raw hand, expects in two years to take in what it takes a man his whole lifetime to do, and naturally at the end of two years, when she goes out to the post, she is not fit for it. She tries, and does not succeed, and then people either give her notice, or she gives it up in despair. But, of course, the great difficulty is that women of my class, who have taken up the work, have not got the money for training. It was only yesterday, since coming up to town, that I met a girl who is in every way capable of making a success at this work, but she cannot get the money for the training. Her father has absolutely refused to give it. He wishes her to remain at home and live with her sisters, because he has to keep up an establishment. That is the difficulty. Now, as regards openings, I have put them down as gardeners in private establishments, first. There is certainly a demand for trained women, especially for posts that can be worked single handed, or with an assistant for doing the rough work. Perhaps a lady takes an interest in her garden, and she wishes to find an educated woman who can be a sort of companion and speak to her on terms of equality. A woman who could do so would, in many cases, meet with success. In this branch of gardening a woman gets from 21s. to 25s. a week, as a rule. At first we never got less than 25s., but now some women have proved themselves rather incapable, and they do not offer, as a rule more than 21s. a week. She can live on that, and sometimes with 21s. a week she gets a room, and possibly vegetables. Then another arrangement which they make is that they can live in the house, and then they are generally paid about 10s. a week, or £25 a year. But we have never found these posts a success. I think that is very likely because the women get tired—gardening in summer is rather tiring work—and at the end of the day they are not in a state of mind in which they will care to sit down amongst a number of strange people. They prefer to live by themselves, and have their own rooms to go to. But several women,

who trained with me, make a great success of it in private establishments. There is Miss Robinson, who is at Tanglewood Cottage, Godstone, Surrey. She was first with the Hon. Miss Wolsley, who has now got a gardening school at Glynde, for two or three years, and then she went to this post. Then there is Miss Tudor, of Pallas Green, near Limerick. She has been in that post for six years. Then there is Miss Carlyon, who has had two or three posts, and she is now back with me as assistant. She has always been able to keep herself without applying to her father for help. I now come to the class of market gardeners. There is considerably more risk for women in this branch. In fact, it is far better to purchase their experience at the expense of their employers than their own, because they must purchase it, and sometimes, if a woman starts market gardening before she knows where she is, it means a very serious outlay. From personal experience, I should not advise any woman to start as a market gardener before she had considerable experience in all branches of gardening. If they do start as market gardeners it is very necessary that they should have some definite branch of work to take up. They should not try and do a little of everything, because the great thing with the market garden is unquestionably to be able to market in quantity and keep up the supply. That, women certainly do not understand to begin with. They do, of course, after experience, but they have got to get that experience first. They cannot set up without a certain amount of capital. Of course, it entirely depends upon the way that they want to set up as to what the amount of capital should be, but I should not think that any woman ought to set up unless she has got quite £250 to begin with, and at the same time she must have sufficient ready money to be able to keep herself for a year or two years after she has started, or else it means that she cannot get on. However, if she is successful in this branch of the work it is by far the best, because, of course, she becomes an individual, and she also becomes an employer of labour, and she is her own mistress. If she succeeds, though she may not be rich, she has certainly a very pleasant sort of life. There are several of the girls who trained at the same time as I did who are making a success of it. There is Miss Cornelius-Wheeler, and also the Misses Haig, of the Castle Hill Nurseries, Maidenhead. They have done remarkably well. They were both women of great energy and enterprise, and they took a very short training. I do not think either of them were there for more than a year; but they had great capacity for gardening, and now they have got a very large business at Maidenhead, and run their own motor, and are doing very well. As to jobbing gardeners, I do not think that this is a branch of work that it is at all good for women to take up, because the places where jobbing gardeners come in are in the outskirts of large towns, and naturally women feel some diffidence about going round with a wheelbarrow and tools, and a mowing machine, and things like that. Half of these gardens have not got these little appliances. Also, it is very hard work, and the utmost that one could get is 5s. to 6s. a day, that is only 30s. or 36s. a week at the outside, and with that work it would be very difficult to fill up all your days just so that it suited you, in the same sort of place which would be within your reach. It seems to me altogether a very rough branch of the work, and very few women have taken it up. But there is one who has made a great success of it. That is Miss Bowden. She lives at Ealing, but then she lives with her own people, and possibly she gardens a good deal amongst her own personal friends. Then as to owners of small holdings: if a woman has a little capital, say, £50 to £150 a year, and does not wish to incur the risk of market gardening, but wishes to garden, and to make that her occupation in life, there is no better way of doing that than to have her own piece of land, and own little house, and to live on the produce of the land, getting from the land what she needs for her own

maintenance, or else growing one or two crops; or she may grow any quantity, so that she can market them. This has been very little taken up at present; but just now it is beginning to be taken up. At Bredons Norton we have got one or two settling on the land, but there has not been time enough yet to know whether it will be a success or not. But I think, where there are several gathered together it would be a success. Then as to horticultural lecturers, for county councils, I am quite sure there is an opening here, and I consider that trained women would be quite as capable of carrying out the work as the men who are doing it about the districts at present. I only speak for my own district, because that is all I have really experience of. I think, perhaps, the County Council have tried employing women for this work, and they have not been found to be a success; there is no doubt at all about it that the reason for this lies in their want of training, because there is no provision made at all in the horticultural work at the present day to train women as teachers. Any woman who wishes to get on a little, and has got any capacity, can set up as a teacher, and it entirely depends on her knowledge and enterprise as to whether she gets on or not. But a great number of them lack a good deal of the organizing power which is very necessary for teaching and carrying on the work, and it certainly is a want in the education that there are neither examinations nor any test whatever to prove that they are capable of teaching before they take it up. As to women as horticultural experts, that is a point on which I can speak from experience. There is quite an opening for them. If a woman settles in a district, and really has knowledge, there is a good deal of work to be got by going round the private gardens and spending an hour or two hours with the lady of the house or the owner of the house, whichever it is who is interested in the garden, and then, according to what she does, such as pruning or budding, or any of the better class work, she can charge according to her time. I go out a good bit one way or the other round Tewkesbury, and the charge I generally make is 2s. 6d. an hour. If I stay three hours in the morning that is 7s. 6d., and that is more than a jobbing gardener could earn with a hard day's work. It does not mean that I labour at all. It merely means that I do some of the finer and better work and teach them how to do it also. As to dairy maids. The demand for workers in this branch has never been so great as for those trained in horticulture; the posts as dairy manageresses are few and far between, and always have been. But, undoubtedly, the conditions that a woman works under as dairymaid in a private house are not suitable to the women we have trained. However, even in this branch of it there are several who have certainly been making a livelihood out of it. Miss La Mothe trained with me and became dairy instructress at Studley and also at Reading; and there is Miss Hoare, who became manageress of the British Dairy Institute at Reading; and there is Miss Blenkiron, who was for several years manageress at Mr. Marshall Dugdale's dairy farm at Penllwyn. I do not mention in my summary poultry keeping, but thinking over these different lines of the lighter branches of agriculture, I may say there are more people almost who have started in poultry keeping than in any other branch of the trade. There are several of them who are making a very fair success of it, and down at Bredons Norton there are two who have started poultry keeping and they are getting on very successfully.

4694c Then as to my own school of gardening at Bredons Norton, which I opened eighteen months ago, and the general character of the instruction given; the great object of this school, or at least what I try to make the great object of it, is to turn out practical women. I have been close upon 10 years now engaged in this work, and my idea always has been that if the women are to become successful, and really to make a living out of the land it is almost necessary that they should devote their entire time to practical work, because they have got to get accustomed to long hours; they have got to get accustomed to the hard work, because it is hard work, and no one can deny the fact: and they have got to get accustomed to the drudgery and routine of it, and all these things do not come at all naturally to women, at least, not to some women that we get hold of. Therefore, in this school, I give a great deal more time to practical work than I give to theoretical work, but at the same time, I do not neglect theory. I have made an arrangement with the Cheltenham Ladies' College by which the students can take classes in botany, and anything in fact that turns upon their work. Then, of course, the actual horticultural instruction, in the way of lectures, I give myself, and I endeavour, always, to carry on the lectures with the practical work. I also give a thoroughly practical education in book-keeping, because I do not see that if one is going

to be a business woman at all how she can start in any business without knowing exactly where she is in this line. Then I have also a small garden for the French system of early vegetable production. I used to go to Evesham a great deal: Mr. John Idiens brought over a Frenchman and started early vegetable production there. This system is that of small frames and *cloches* on hot beds, and out of these a tremendous lot of crops are got. It is light work and very well suited to women. Last year I put £100 into this special branch to see what I could do with it. I started in October, and before the second week in April I got a crop of 50 doz. lettuce off. I have received, in actual cash, £6 on the lettuce, and I am now pulling carrots and turnips, but I do not know what they will fetch in, because they only came in in May and the month is not yet out, but still, £6 to begin with is not such a bad interest on the money.

4695. Might I ask as to your school how was the capital provided?—I provided it. I put about £250 into it to start it.

4696. (*By Lord Moreton.*) In other words it was a private venture?—Yes, a private venture entirely. The only thing is that I have been very lucky indeed in starting on the property of an American lady, Miss Zula Woodhull, who is extremely interested in this work for women, and up to the present I have had the actual garden, which is a little over an acre in extent, rent free, and just lately a large manor house in which I have been renting rooms. The farm people have gone out, and she has taken that into her own hands, and I have had that rent free for the last three months, because there are a good many improvements going on in it, and the workmen are all about in it, and until all the improvements are finished I am going to have it rent free. That will probably be until next January.

4697. (*By the Chairman.*) You are the principal of the school, are you?—Yes.

4698. How many assistants have you got?—One.

4699. What does she teach?—Horticulture.

4700. And you teach horticulture?—Yes.

4701. Is there any instruction given in dairying?—No, but there is everything ready to start a dairy immediately; the opening is there for it. This American that I speak of wished me to open a dairy in the spring. She offered me six dairy cows straight away, but I did not feel that I was capable just at the moment of contending with it, because my school is just in its infancy, and it seemed to me a great pity to rush into another branch that I was not really capable of managing myself and increasing the expense till I was ready for it, but there is no doubt about it that a dairy, properly equipped, will be opened there in course of time.

4702. That is ultimately your object?—That is ultimately my object. The poultry and bee keeping has been started. I do not do them myself, but I have two ladies down there who are fully qualified to teach both. One was an instructress at Studley, and the other we trained at Studley, and they are both qualified to take pupils; and anyone coming to me wanting instruction in poultry keeping gets instruction from them.

4703. What are the number of students there?—I only have five students at the moment.

4704. Are they resident at the school?—Yes.

4705. For how many have you room?—I have got 16 bedrooms now, but I have only had those quite lately, because when I started I had just to take the rooms in this farmhouse from the people. It was close to the garden, and I just had to take the rooms as I wanted them. The people went out on the 29th September, and since then the house has been pulled about, and practically every month another bedroom has come in.

4706. What fees do you get?—£60 a year.

4707. And you get no grant from the County Council?—No, it has been entirely my own venture.

4708. What is the length of the course?—Certainly two years. I absolutely refuse to send any girl out to do anything under two years' training, and even then I dislike very much them having to go out, because they are not ready in two years. That is the whole fault in the system of this education, that the training period is too short.

4709. You mean two years should be the minimum?—Yes, especially when you think what they have got to cover in two years.

4710. You would prefer to keep them three years?—Yes, decidedly.

4694d

Miss
M. Crooke.
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28 May. 1907.

Miss
M. Crook.
28 May, 1907.

4711. Do you give them a certificate at the end of the course?—I have not considered this, because it has all been so much done on my own initiative, but I prepare them for the Royal Horticultural examination. Two of them have just been up for it.

4712. To the Royal Horticultural Society?—Yes. I prepare them for the Royal Horticultural Society's certificate.

4713. For the examination?—Yes. This is an examination that practically covers most things in horticulture.

4714. Are those girls farmers' daughters?—No, they are not. They are gentlewomen, and that is what I have tried for in my school.

4715. That is your object?—That is my object, because it is so difficult, when you mix them, to get on. There is always a difficulty about it.

4716. Are the women well prepared when they come?—No, we generally get quite raw girls—possibly girls from the public schools. These are the sort of people who are sent to you as a rule. The women who take it up run very much in two classes. A girl about 18 is sent straight from school to make a profession of it, or else a woman of 25 to 35 comes who has done a lot of things and is tired of knocking about and thinks that gardening would come in well.

4717. You have no help, have you?—Yes, one assistant.

4718. You have need of supplementary education in various ways?—Yes. Sometimes they are very bad in arithmetic, and that is discovered in their book-keeping classes.

4719. Have you book-keeping classes?—Yes, but not at my school. I have arranged for them to be given in Cheltenham at the Ladies' College.

4720. You find there everything in the way of auxiliary accessories?—Yes, they have got very good laboratories and things like that, which would be a considerable expense to me.

4721. Now what do you say with regard to your Women's International Agricultural Club at Bredons Norton?—That was quite an idea of my own. When I was at Reading studying, a lot of women came who wanted to fill in time and to learn a little about horticulture, or to be interested in it, or perhaps they were going to settle in the country, and wanted to be able to interest the country people in, perhaps, school gardens, or something like that, and they would come for instruction. It never answered very well when they came like that, because often they were much older women, and perhaps married, and had settled down to certain rules, so that it seemed to me that there should be some kind of club house, where they could come if they wanted to, or could come to when they had finished their training at one of these colleges. There is an awful risk if a woman takes a place that she will make a failure of it. If she takes a house and undertakes to do market gardening it is a thousand to one she will fail, and I thought if they had a club house where they could come for a year or two, and pay for board and lodging, and have a small plot of land, say, an acre or two acres, or half an acre even, then they could test without any risk of spending a lot of capital whether it would be eventually likely to be a success. Therefore I reserved in this manor house, which I have got, a certain number of rooms, which are called club rooms, and these people come there. I have got one lady there who has half an acre of land and a small greenhouse on it for growing tomatoes only. If she fails she will only then lose what her room has cost for the year. She will have put nothing into the furnishing of the house or anything like that, or into equipping a business, and I on my part will lose nothing, because her room will be there, and whatever she pays will cover her living and room expenses. Then, also, I thought the women who come down from town, who wanted to come to the country for a month or three weeks, instead of doing nothing, might get interested and go into the garden for three weeks, or into the poultry-yard for a fortnight, and so on. That part of the scheme is answering very well. They come in and go into the garden or poultry-yard, and do so many hours work a day when they come down for a holiday. There are also five ladies living in cottages in Bredons Norton village—ordinary village cottages—at a rent of £10 to £20 a year. The most expensive one is £20, and the cheapest one is £8. They are just workmen's cottages, and we do them up artistically. They mostly have a little bit of garden. The ladies settle in these, and they come up to the club house for their meals; instead of being worried by the awful servant question in the country, and all that sort of thing, they can get their meals quite comfortably at the club house.

They are able to live in the cottages and carry on their occupation and practically settle on the land without being put to the expense of actually keeping an establishment. Most of them do everything for themselves, and generally have a charwoman in once a week. One lady goes in for breeding pet dogs, and another is a secretary, and she gets outside work. Then two go in for poultry, and so on; so that in that way the agricultural club is answering very well.

4722. This work is entirely independent of the school, is it?—No, because it is really all done by me.

4723. But the objects are quite separate?—Yes, except that I use one house for all purposes. It acts as a club house, and resident students live there.

4724. (By Lord Moreton.) Do you consider that educational?—Yes, I consider it is the carrying out of the whole thing, because it allows the women who are trained to settle on the land. Most of these women were trained at Reading or Studley.

4725. They are all trained women, are they?—Yes. That is the idea of the whole thing—to get them into these little cottages and let them have their own bit of land so that they may carry on whatever pursuit they feel inclined to. It is also good for the villagers. These women become employers of labour and they are worth a good deal one way or the other for the village people.

4726. (By the Chairman.) Is this club house self-supporting?—Yes, with the exception of the £250 which I put in to start it. That was the capital to equip it.

4727. For furnishing it?—No, not for furnishing, but for the hundreds of things that you have got to get when you make a start. It was not exactly the furnishing, because Miss Woodhull, the American lady I spoke of, has done all the furnishing of the Manor House. The £250 was required for the things you need in starting a garden and equipping it.

4728. That club building is entirely independent of the building for the school, is it?—It is not really, because it is the same building. There is only one and the same building, but they are carried on on entirely separate lines. The building is big enough for everything—both club house and students' rooms. It will no doubt be separated in the course of time when there is a great demand, but at present the one building is big enough to hold both.

4729. But the ladies who are members of the club and the ladies who are your students are anyhow separate?—Yes.

4730. And they do not have their meals together?—They do have their meals together, because I have one big dining-room and they have all their meals in it at the moment, but it will not be always so. There will be a club dining-room.

4731. Your object is that there should be two distinct institutions?—Yes.

4732. For the present they are practically amalgamated?—Yes.

4733. That is for domestic purposes?—Exactly—for domestic purposes. It is for my own private domestic purposes.

4734. (By Mr. Latham.) Why do you call it the agricultural club and not the horticultural club?—Because it embraces the lighter branches of agriculture. If you call it the horticultural club you confine it to horticulture only. But we have got the dairy people and other people there, and it is called international because we do not want to confine it only to English women.

4735. Have you any foreigners?—Not at present.

4736. But would you take them?—Yes, if they came along. Of course if a foreigner came she would not be refused.

4737. (By the Chairman.) Do you consider that the general results of your club are very satisfactory?—I do. I consider it is the carrying out of the training, because I consider that so many women fail after they have trained because they have got no guidance at all. They attempt to do a thing really in two years that it takes a man practically his lifetime to arrive at, and that must mean failure. I am quite certain that a great number of women have failed; they have slipped out of it and we have heard nothing more about them.

4738. Your object is to test their business capacity as women?—That is so, before they are let loose on the public, if you like.

4739. What do you consider the qualification required?—I think the first qualification of all is common-sense, which a great number of people really lack. The

second is, definite purpose. It is very difficult for a woman to be definite. Her mode of life does not make her definite, and she so often does turn aside from one thing to another because of the opinions of other people. Then the third thing is strength of mind to stick to the purpose when she has arranged that she will have one. Then she must have fair average health. I think also that all women who take up the work should have a little capital. It is no good advising women with absolutely nothing to become gardeners, because the outlook for them is not at all hopeful. A woman must give all her energy and strength to her work. We have never seen any old women gardeners yet, because there are not any who are very old, so that we do not know how the life will try them at all or what sort of women they will be at 60 or 70. We do not know that, if you work and can only get 25 shillings a week you cannot save much out of that if you have to live upon it, or at least you have got to be very clever to do it, but if you have £1 a week of your own and you earn 25 shillings a week you can save the 25 shillings for old age or for a rainy day and be quite comfortable on the money. Living the life of a woman gardener you live a much more simple life than the life you live in town, and you can be very happy and comfortable, and in fact almost luxurious, in a cottage in the country if you know how to manage with very little money. Even if it is only £50 a year, there is nothing better to go in for than gardening, but if you have no money at all, and if there is any other profession where women are better paid and they can save more money, they ought to go in for that instead.

4740. Do those ladies who live in the cottages keep a cow?—No; but then they have their meals at the club house.

4741. Then there is no dairying?—No, there is no dairying at the moment.

4742. And you do not intend to have that, do you?—Yes, I do intend to have a dairy.

4743. And also a dairy connected with the club?—Yes, most distinctly.

4744. And with the school?—Yes. It is only a case of it being just the right moment to start it. I do not wish to hurry the thing, because it is developing of itself, and that is a great feature in my opinion.

4745. Your idea is that with a limited amount of capital this can be made remunerative?—Yes.

4746. Both for market gardening and dairying?—Yes—but I do not know about dairying because I am not qualified to speak about dairy work in the same way. There has never been the same training for them. But I know we always worked the Studley dairy at a loss in regard to butter making.

4747. Was the Studley dairy worked at a loss?—The butter making was.

4748. But not the cheese?—No, not the cheese.

4749. The cheese was remunerative?—Yes.

4750. But the butter was a loss?—Yes, the butter was a loss.

4751. How do you account for that?—Because it takes 2½ gallons of milk to make a pound of butter. We were buying the milk for the dairy and the cheapest we could buy was sixpence a gallon, which is cheap. That was 1s. 3d., and the utmost we could sell our butter for was 1s. 4d. a pound. That was the utmost we could get for it, and we could not always get that. Then there was all the outlay for the instructress and all the rest of it, and a lot of places to keep up.

4752. (By Lord Moreton.) Would you mind telling me where Bredon's Norton is?—It is on Bredon Hill.

4753. That is on the north side of Tewkesbury is it?—Yes.

4754. What has been puzzling me is in regard to clause 1 of your abstract where you speak as to dairy maids. All the other subjects I should call horticultural?—What about butter making.

4755. But what I want to ask is as to a thing you mentioned about the dairy. The dairy is yet in the future?—Yes; I have not got a working dairy at the moment.

4756. Do you propose when the time does come for the dairy to start a farm?—Yes. To start a farm and to keep my own cows. I am on a regular farm and I have got the house belonging to the farm.

4757. One great thing in regard to this question is the keeping of pigs. That is a great help is it not?—Yes. I

always keep pigs. My profit on the pigs this last year was £6, but I did not keep very many, but still that was the profit.

4758. I take it you have classes for botany?—Yes at Cheltenham Ladies' College.

4759. What sort of bookkeeping is it usual to have—is it commercial bookkeeping?—The bookkeeping has always been a great difficulty, because when I took my bookkeeping at Reading it always seemed to me it was very much above the heads of the people. I do not think we really understood it. I certainly never could have kept books from it, but I had to. When I came to Bredon's Norton I wrote to a friend of mine, a mistress at Cheltenham, and asked her if she could get me anyone who was practical and who actually had the books of a large business to keep. She recommended me to Messrs. Norman Sawyer, the big printers down there, and Mr. Sawyer has very kindly taken the classes himself. He really has taught us, and so much so that I keep all the books for my place, and I have had them properly audited this year and all are properly kept in a business-like manner. They are just such as we want for the actual business.

4760. It is not the usual commercial bookkeeping but bookkeeping specially adapted to your agricultural work, is it not?—Yes, and as simple as possible.

4761. In your opinion that is amply sufficient to teach you all you require?—Yes. My books could go up to an auditor at any time.

4762. You think it is quite sufficient bookkeeping for your purposes?—Yes. One can only speak from one's own experience, and I have attended the classes from time to time for the last six years but it always seemed to me quite unsuitable for what we wanted.

4763. (By Mr. Latham.) When you spoke of 12 students and of them being increased to 24 and about the 40 students, were they students of Lady Warwick's hostel?—Yes, they were. That was the hostel at Reading when it was first started.

4764. Was the increase to 41 at Reading or Studley?—Reading.

4765. What did you do when you got to Studley?—I, personally?

4766. No, the students?—We mostly took the instructresses with us.

4767. What were the numbers of the students at Studley?—The number of students was 40 then. When we actually took up residence there we brought most of them from Reading with us.

4768. Your own school is an offshoot of Lady Warwick's, is it not?—It is not an offshoot, because it has nothing to do with it.

4769. I did not mean that?—But I was trained for teaching, and I thought I would have a trial on my own account.

4770. It is virtually on the same lines then?—Yes, except that I do not have so much theory.

4771. What did you mean when you spoke of incompetent women?—Do you not think there are a great many incompetent women about?—

4772. I quite agree, but I should like to have a definition?—The incompetent woman in horticulture is the woman who is not sufficiently trained to make herself competent to take up the work.

4773. That is before she comes to you, is it?—No. She does not give a long enough time to her training, I mean.

4774. You did not mean women that had failed in other subjects, did you?—Yes, because the work has an attraction for them, and they think of the open air life and the pleasantness of it. That is the thing that attracts them and they think if they do not make a success of one thing they will make a success with that.

4775. Then you meant women possibly who had failed in other subjects and took up gardening at last as a last resource?—Yes, I think that that defines it.

4776. I notice you omitted to deal with bee management?—We have bees.

4777. Then you do not seem to have said anything about teaching cooking?—No, because we do not teach cooking. If you want that there are so many places for teaching that that I think it is a great pity to mix them up, and there is no time for it. If you are really doing this work you are doing it as a profession. At this time of the year you are practically occupied from six in the morning till dark in

Miss
M. Crooke.
28 May, 1906.

Miss
M. Crooke.
28 May, 1907.

the evening, so that if you had to take a cooking lesson during that time there would not be much time for it.

4778. But is there no occupation for women in going out and giving lectures on cooking?—There is a great opening for them; but that is not the sort of work I do. I know very little about that.

4779. But there are openings for women who have received a thorough training in the lighter branches of agriculture, there is a lot of money thrown away in labourers' cottages over bad cooking?—I quite agree with you there.

4780. One of the best ways for spending women's time would be to go about teaching agricultural labourers' wives how to cook, would it not?—That is quite true, but I have not looked upon that as one of the branches of horticulture or agriculture.

4781. Is it not possibly part and parcel of agriculture?—I did not think of it in that way.

4782. I take a great interest in flower shows and we always give prizes for the women that can produce the best dinner at the least cost, and you may be surprised to hear that tenpence generally is sufficient to win the prize, and if a lady could go round and tell people how to produce a good dinner for tenpence it would be an exceedingly useful piece of instruction and not very hard work, do you think?—Yes, I think so. The only thing is that it does not appeal to me, being a gardener. You must have somebody to do the cooking. You are too much occupied and too tired to prepare your own dinner if you have been doing gardening.

4783. Do you think it is derogatory to the class of women you are brought in contact with to do that sort of thing?—Not a bit of it. Mr. Medd has been over to our place, and has had dinner with us. The dinner was all prepared by gentlewomen, and waited on by gentlewomen. I knew I should never be able to cope with the servant question in the country, so I got back some girls who had trained under me, and one of them took lessons at Marshall's School of Cookery, and others in housework. We have been going on for 18 months now, and we have not had any servant at all except a boy or girl for doing the actual washing up. It is not the case that they would not do the washing up, but only that there is not the time for it. I do not consider it is derogatory for them at all. The more they work in every way the better, and I do not think it hurts them in any way.

4784. Are there ladies that are doing this work old students?—They were old students that I knew personally.

4785. Did they fail in gardening?—No, they did not fail at all, but they had not enough to set up, and I said if you come I will pay you the wages of the housemaid or the wages of the cook, and so they came. We all eat at the same table, and two or three get up and do the waiting. They have a little uniform—a little red coat in winter, and a white coat in the summer. They open the door and wait on the people. I gave a sort of opening day, and they did all the waiting; and they get the teas ready. We have people sometimes motoring up for the day, or coming down from Cheltenham, and they do all the work as to bringing in teas and so on.

4786. I suppose your club-house is more or less a sort of hostel for your establishment?—Yes, I suppose it is.

4787. Are your own students now on the same lines as the students that used to be and are possibly now with Lady Warwick?—Yes, one of them is a student from there. They are the same.

4788. What class are the students taken from?—I have not a bit of feeling that class makes any difference, but I think, where you have got a lot of women together, if you can keep the gentlewomen together it makes the place certainly much easier, and I have in a way catered for gentlewomen.

4789. I did not mean my question to be interpreted exactly in that way. By the class of persons I mean were they doctors' daughters or clergymen's daughters, or what?—Clergymen's daughters and Army men's daughters generally.

4790. These ladies are people who are in a higher class of life, but are unfortunately unable to support themselves without doing something?—Yes. There are a great number of girls whose fathers perhaps leave them a little money, but not enough to keep them, and who do not marry, because in these days there are not enough men to go round, so that you have got to provide something for them.

4791. You spoke of a girl whose father was not willing to

let her go from home?—He was not willing to give the money to pay for the education and keep necessary, and you cannot take them for nothing.

4792. Did he think it was derogatory?—No, not a bit of it, but he has to keep a house, and, like a great many other men, he does not wish that a woman should have any independence at all, and so he likes to keep them in the house, doing nothing possibly. He will not give her the money to go out of it. In your own house you can keep a daughter for 10s. a week; you cannot do it on 10s. a week if you send her anywhere else.

4793. You have been rather inclined to run down dairy-maids. You do not think there is a good living to be made for them in that way?—I do not run them down, but there is not a good opening for them—not for the better class of them. I think there is an opening for farmers' daughters if they train; but I mean really for the better classes, the daughters of professional men, there is not so good an opening in that way.

4794. You know that the County Councils are not doing so much in dairy work as they did do?—No, I did not know that.

4795. The itinerant dairy school is almost a thing of the past. There is nothing like the number of travelling dairy schools there were when you were admitted?—I did not know that at all. But that always was my opinion of dairy work, and when I was thinking of taking up this work myself, I said it is no good taking up dairy work unless you have got a good deal of capital. I do not want to say it would not do if you had enough capital, but it requires more capital considerably to set up a dairy farm than gardening, and there is a good deal more risk to be run, because there is the risk of the animals dying and your being left without them, and women hesitate very much about taking risks.

4796. But in a frosty year there is great risk in regard to gardens?—Yes, but you can contend with that. It is a case of care.

4797. What about your short courses?—The people coming to settle for a short time do you mean?

4798. Yes.—I do not have actual courses. Supposing I met a woman to-night, and she said, "I should very much like to come down, but I am so tied that I cannot leave home for any length of time," I should say, "How long can you leave for?" She would say perhaps, "A fortnight," and I would say, "Then come down for a fortnight." Then she might come down, and if she wanted to do a little gardening she could go into the garden and do that, or, if she wanted to do a little poultry keeping she could go into the poultry yard, and in that way she gets a certain insight into it—not a lot, but quite enough to show her how the thing works.

4799. That would be very little education?—It would not be any practically; but supposing you want an insight into country life, if you are an observant person you can get a very good insight in a fortnight. It depends entirely on your own observation.

4800. That is probably more by way of a visit to you than by way of getting any education?—I do not know that it is, because I have not got the time to entertain them as guests. They must either be picking up what they can, and amuse themselves, or look after themselves in some way. We had a lady down for a fortnight, and she went down every morning for instruction in poultry, and spent three hours every morning at it. She said she learnt a lot. I do not know whether she did or not, but anyhow she said she did. She kept poultry herself, and this was just the incubating season, and you can learn a lot in a fortnight really.

4801. Now, with regard to bee management, do you ever get people to go out over the country to look after bees?—Miss La Mothe, who was down at Bredon's Norton a little time ago, and she was going to go to Derbyshire. I think she went for three weeks. She visited different places where they kept bees, but I have not seen her since she came back.

4802. Do you know Lord Sudeley's place round there, close to Evesham?—Yes.

4803. There was a very large number of bees there, and a young lady to look after them?—Women are capable of managing bees. In fact women are not half so frightened of them as men.

4804. Is that remunerative?—They say bee-keeping is very remunerative.

4805. I know that, but is the teaching remunerative for the instructress?—I do not know what she got. Perhaps Mr. Medd knows what they give for things like that.

*Miss
M. Crooke.
28 May, 1907.*

4806. (*By Mr. Medd.*) £60 to £80 a year.—She was only engaged for a very short time.

4807. (*By Mr. Latham.*) What would you think would be about a fair price for an ordinary lady gardener to get, as a jobbing gardener, say, because you gave us a figure of 6s. just now, and I know a good many jobbing gardeners in London who do not get anything like that?—So much depends on the district as to what you get.

4808. But for the information of the Committee what do you think would be the general pay of these ladies, provided they take up jobbing gardening?—To be quite candid and honest about it, I should not pay a woman for jobbing gardening, because, if I got a man in for 2s. 6d. a day, as you can in the country, I could get much more out of that man than out of a woman.

4809. But I should like you to understand my question more definitely. There are a great many gardens in the suburbs of London that cannot get any attention whatever. Now a woman would be very useful and would get an exceedingly good living in the suburbs if she would go and do most of the work of these gardens, and, according to my experience, from what I saw at Swanley, women are brought up to do the whole of the harder work of the garden, and what would be about the pay the woman ought to receive if she went round and did that in these suburban gardens now, because that is a thing I am very much advocating myself?—You must give a living wage.

4810. You would not think that work derogatory, would you?—I would go for it like a shot. I do not mind what I do, but I was just thinking what would be a living wage for women of my class. I must have certain things. I have been brought up to be accustomed to certain things without which my life would be a misery. I do not mean that they are luxuries in any way, but I should want a decent place to live in, and if I had a room or two rooms in the suburbs of London somewhere I should have to pay pretty heavily for them. I do not know what it would be, but there would be that, and there would be my food to contend with. Therefore, I should have to get enough to cover that to make it worth while to take up jobbing gardening, and some little sum over. But if you did ask 6s. a day people would think you were asking a lot. That is only 36s. a week to live on and everything else.

4811. I can speak from experience as to potting and planting out different beds. That is done by the daughters of many people I know, and would that be considered derogatory work?—No, I consider nothing is derogatory work.

4812. Would it be derogatory work for your students to take up?—No, decidedly not. Only I do not think jobbing gardening is the best form of it, because it is a very hard form of work. You have to go about from place to place to get your work, and it is very difficult to carry on the interest in these small gardens. It is more or less a hard form of life, and I do not know how you would pay a woman if a wet day came.

4813. I do not know that myself, but I have always felt, with regard to Lady Warwick's teaching, that there never can be openings for you all?—No, I do not agree with you there at all. I think that there is an opening for all the women who are capable of taking it up. But the fault of the teaching is that a large majority of women are not capable. Supposing, for instance, twelve women made up their minds to go and settle in a given gardening district, and they either lived in little cottages or at one big house, and they carried on a large market garden as trained women, they would very soon make the place go.

4814. I suppose you will very readily admit that many women have not money?—Yes, I do most decidedly. I think it is the exception for women to have money.

4815. You cannot all get places to look after, like greenhouses and vineries?—Certainly not.

4816. But if this is to be a very great success, most of this outdoor work must come to the ladies' share?—A great number of them prefer outdoor work to work under glass. Nothing is unfit for a woman to do in that way. They manure the ground and turn the manure, and do everything at my place. I do keep a man, but it is only because of the amount of work. It is not that they will not do it, or that it is derogatory in any way to them. All work is honourable: it does not matter what it is.

4817. Do you grow sufficient fruit to be able to grade it and pack it?—Not at present.

4818. Have you had any experience of that kind?—Yes, a good deal.

4819. Do you teach it?—Yes.

4820. As to this system of early vegetable production, have you had any experience of that?—No, excepting as to gardening at Evesham, which has been going on now for over two years.

4821. It is not what you are doing yourself?—I only started in October, and I have given you the results up till April, and I have only started on a small scale. I have only put £100 into it, whereas the one at Evesham, by this time, has had several thousands of pounds put into it.

4822. Have you any idea of getting any aid from outside, such as County Councils, or the Board of Agriculture, or anything of that kind, to assist you in your work should it develop and increase?—I have not thought about it—I have not considered the subject.

4823. Would it be your wish?—Yes, it would be my wish, only, of course, I know perfectly well that once you commence to take public money you must become a public servant, and you must do whatever they tell you to do. I rather wanted to carry this out on my own lines for a special class of women, because I think that the bigger places will provide help in the course of time for all County Council girls, say, but when the bigger places do get help there will be a certain percentage of women who will be prevented going to them. I am not a bit of a stickler for class—I know what I say sounds as if I were, when I talk about it but you have to cater for a certain number who *are* sticklers for class.

4824. If you did do that you would be under some sort of supervision?—Yes.

4825. Would that be irksome to you?—No, I should not mind that. I rather like being under supervision. It keeps you up to the mark, I think. It is only the class I am afraid of.

4826. Then another thing would be your examinations—they would be more severe?—I should not mind that. Cheltenham Ladies' College ought to be able to bring them up to examination standard.

4827. Have you any idea of joining Cheltenham?—I have amalgamated, in a way. I went to see Miss Beale and she very kindly arranged that any education I wanted to give she would arrange classes for, and as we have wanted classes they have had them at Cheltenham. My student goes once a week, regularly, for botany.

4828. Would there be any diplomas or degrees attached to that?—I shall, in the course of time, have a certificate for the school, but at present there is not one.

4829. To what extent is your poultry-keeping carried on?—We have got about four acres now with poultry on. The poultry branch is rather good, but it is just beginning. I have got a very enterprising woman, and we have just taken six acres of land for poultry—that is orchard land.

4830. You have said that you could not make butter-making very profitable. I suppose you have never really tried it?—Yes. I do not mean to say I have actually made butter myself, but I have lived at Studley for two years, also at Reading, where we had a small dairy.

4831. You said butter-making was not a profitable way of farming?—No, I do not think so.

4832. I keep rather a big butter farm and I make it pay quite as well as milk selling?—But you have got your own cows and land. I meant buying in the milk.

4833. I have got my own cows, but I rent the land, and I think it is a mistake to think that butter-making cannot be made to pay. I think it would be a very valuable thing to you if you went in to any extent for it. What do you say to that?—I think without doubt we will have a dairy. We would have had a dairy before now if I had had a little more enterprise. It was only that it was a case of making a start.

4834. You speak of ladies and small holdings. Do you think that is practicable for ladies at all?—I am trying to teach them to be practical. All women are not practical to start with. If you can keep some sort of supervision over them and help them after they are trained, you are bound to help to make them more practical. Women are only not practical because they have not had the training in it of other people.

4835. But small holdings of land in very little quantities would provide a very small living, and the lady would not expect to do the work herself?—She must do it herself.

4836. She could not plough the land herself?—No, but she can always hire horses and labour for a day's ploughing.

4837. I cannot help thinking that if such a person has

Miss
M. Crooke.
28 May, 1907.

a small holding she must do practically all the work herself?—You might as well say that is so in gardening. It would be an awful waste of a woman's time to do the actual heavy digging in the garden, she would physically tire herself out.

4838. If she was a small holder she would be obliged to labour on the wet days as well as the fine?—Yes, but she always goes out on the wet days now. We never know when it is wet with us.

4839. (*By Mr. Davies.*) You told Mr. Latham that your institution had no financial assistance from the County Council or Government?—No.

4840. Would you be prepared to have such assistance if it was forthcoming?—Yes, I think I would, decidedly.

4841. In what way would you spend the money and allocate it?—In improving education. I could not say straight off about that. If I had to start a dairy that would be a considerable expense, and I should have to have a properly trained person to teach in the dairy, because I could not look after it myself. So that in that way there would be a salary to go out.

4842. You would start some new department in connection with your work?—Yes, because it will eventually go on and work itself.

4843. Then with regard to the ladies who live in the cottages, are they there permanently, or only for a time?—They take the cottages by the year. If they fit them up as their home they have got all their household-gods round them, and no doubt they will be there permanently.

4844. So that you really wish to start a colony there?—Yes, that is my idea. Every cottage that comes into the market I take at once myself, and someone turns up for it. I have got two or three people now waiting for cottages as soon as I can get them, but they are not easy to get, and the landlady will not build.

4845. Then it is not your intention that these ladies when they have had their scientific training at Reading and elsewhere should come there simply for a year or two to learn the practical part?—I do take them on for that as well, but then I call them improvers, and they do some teaching. I always keep one improver who helps with the teaching, and she finds what it would be like if she had to do it herself. She fits in with the longer hours, and does more of the work.

4846. I rather gathered from your answer that you regarded these cottages as a stepping-stone between a scientific training and the work of the ladies when they settle down?—I hope they will settle down ultimately and collect in the cottages. Then two or three of them will perhaps take up one branch of market gardening, and two or three another branch, and two or three take up dairy work. I have got two now who have taken up poultry work. So that they will all amalgamate and have a market. It will be all sent up from one centre. That is my idea of the scheme as it grows. The women will be saved all the difficulty of working by themselves in small places, with the difficulty of getting to railway stations. One can take all the produce in that way, and instead of one woman having to keep a cart, the same cart will take the produce of five or six women.

4847. Do you intend them to go out as missionaries in that work afterwards?—I intend them to do exactly as they like. Practically they are doing it, and the only thing I try to do is to get them together and to see what they are made of, and then to try and direct them as to what they are best fitted for. One may be all wrong, but the chances are that you will not be wrong, because you think more about it.

4848. Then I understand these ladies who live in cottages are self-supporting entirely?—The women who live in the cottages are self-supporting.

4849. They do not come down on the Institution?—Oh, dear, no. They come to Bredon's Norton, and they have got enough to take and furnish a cottage. They settle in it, and follow whatever occupation suits them. One breeds pet dogs and whatever she makes out of her dogs she makes for herself, and whatever she loses she loses. That is the way of it, and I take no responsibility. They simply take their cottages, and the only thing I can do is to enable them to live in the country under the best circumstances in the way of household arrangements and domestic arrangements.

4850. Then with regard to the other part of your work, it is entirely separate?—Yes, entirely separate. They have regular hours of work and regular classes.

4851. What becomes of them when they leave?—I have only been there 18 months, and there has not been time for that yet.

4852. How long is it to be for?—These arrangements are for some of them staying two years and some longer.

4853. (*By the Chairman.*) But you will impose a limit to their staying, will you not?—Yes.

4854. You intend to?—Yes. After they have been with me three years, and if they still have money to go on with their training, they must go out to get a more varied training. I consider I shall have taught them all I can in three years, and if they want to specialise in any subject they must go to a place where it is specially taught. I do not mean the cottage people should be limited as to time, only the people who have trained here.

4855. They are under your supervision while they are in the cottages?—If they want any help in their work, if we can give it to them, we do so, but they are really quite independent. They have nothing really to do with us except that they come for their meals with us.

4856. But I thought that your object was to test whether they had the necessary capacity to be launched out?—Yes, but they very soon find out that for themselves. You say to them, perhaps, "I do not think that is the sort of work that will suit you" and so on, but if you saw a woman who was not really going to make a success of it, or hated living in the country, they would very soon go.

4857. What is the tenure of these cottages by these persons who earn their living?—They can go on as long as they like.

4858. You do not impose any limit?—No, none at all. I take the cottage, and then someone comes and says "I want a cottage," and I say "Very well, such and such a one is vacant." And possibly I do the arrangements with the landlord, but that is all. They sign the contract, and take the cottage, and then I have nothing further to do with it, except to help them if they want help.

4859. They need not take their meals with you unless they like?—No, not unless they wish. But they all find that to be a tremendous convenience.

4860. And, of course, you have not any experience yet as to the time they will remain there?—No.

4861. The experiment has only just begun?—Yes, practically only just begun.

4862. (*By Mr. Davies.*) Do you make it a condition that your students must pass through a secondary school before coming to you?—No.

4863. Do you find that most of them have had some sort of secondary education?—No, I do not think so. Most of the girls who come to us have come from schools like Wykham Abbey, and those sort of places; and we have had several from that big school near Brighton.

4864. I mean schools between elementary schools and university colleges?—No; but I do not know enough about women's education to know where they come in, but they come from what we call finishing schools for girls.

4865. Nearly all private schools, are they?—Yes.

4866. Do they get a good education there?—Some of them are ignorant. I am not very well educated myself, but I am often amazed at the grammar in their papers that they send in to us for correction. I have papers every week, and in nine cases out of ten the spelling is bad and the grammar bad. But I am told they do not teach grammar at schools now. It is not considered necessary to learn English grammar, because it is said you are born with it. But, however, I was never educated myself; I was simply brought up in Ireland and had one of those old-fashioned governesses who go on from one generation to another. I know one was taught to write a letter to an educated woman, anyhow, but with a great many of these girls they cannot, and their handwriting is so bad.

4867. Do they get any kind of scientific instruction or any botany?—Yes, sometimes a little botany. It is not so, as a rule, but sometimes we get them having had a fairly good training in botany.

TENTH DAY.

Wednesday, 29th May, 1907.

PRESENT:

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

Lord MORETON.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. J. C. MEDD.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. J. MARSHALL DUGDALE called and examined.

4868. (*By the Chairman.*) You represent the Royal Agricultural Society?—I do.

4869. You are prepared to give the Committee some information with regard to the agricultural educational work that is carried out by that Society?—I am. I do not think it is necessary to take up your time very much. I believe you have had a copy of these notes and, therefore, it is almost unnecessary for me to repeat that. I have traced out the history of the educational work carried out by the Royal Agricultural Society from the start, and taken from the different reports how it began in 1863, owing to a speech by Mr. Chalmers Morton, and in 1864 a prize of £50 was offered for an essay on agricultural education. In 1866 our examinations were held in connection with the Oxford and Cambridge Locals; in 1868 the first senior examination took place; in 1874 the junior examination was founded. Then in 1890 the Royal got into communication with the Board of Agriculture as to a Board of Examiners being appointed.

4870. I see in 1868 the students all failed in book-keeping at the first senior examination?—That is so, and that is what, I think, is one of the most important things in connection with farming.

4871. (*By Lord Moreton.*) At the same time you would agree with me, probably, that it is one of the most difficult subjects, both for the pupil and for the examiner?—That is so. The question of agricultural book-keeping is a difficult one, but in my opinion, an important one. Then in 1890 the Royal got into communication with the Board of Agriculture and they passed this resolution: "The Committee were entirely agreed that some such examining body was advisable, and they recommended that the Council should co-operate with the Board of Agriculture." That was the next thing. In the same year, I ought to say—I have omitted it from my notes—that Dr. Fream brought out his first edition of "The Elements of Agriculture," which has gone through a considerable number of editions and is quite a good text book still. In 1891 a paper was read by Dr. Fream on technical education in agriculture; in 1895 the question of the central board of examiners was considered at the Council meeting on May 8th, and it was resolved: "That it is desirable that the Board of Agriculture should be asked to convene a conference of representatives of the leading agricultural societies, colleges, and institutions, to consider the question of the appointment of a Central Board of examiners in dairying with a view to secure uniformity in dairying examinations." The result was that, as far as I remember, in October, 1895, a conference met and the question was gone into, but there was nothing definitely decided. In fact, everybody had their different ideas, and it was rather hopeless. On July 31st the Board of Agriculture advised the postponement, I believe, on account of political reasons, more than anything else, in a letter of June 29th. On December 11th the Education Committee of the R.A.S.E. suggested a dairy examination for Diploma. The first examination in dairying was held in 1896. As a matter of fact, I was a steward for that examination, and I helped to arrange all the details, and I have been steward ever since. In 1897 the joint Board of the Royal and the Highland Society was constituted, and the first examinations were held for the National Diploma in Dairying. An examination was held at Kilmarnock as

well as at Reading. In 1899 the Royal Agricultural Society and the Highland and Agricultural Society determined to hold a joint examination for a National Diploma in Agriculture, and in 1900 the first joint examination was held at Leeds. Of course as I say in my notes, in addition to the examinations, there have been the reports in the Journal, which you know about, and also reports from the various Committees, such as the Chemical and Woburn, the Botanical and Zoological, and, possibly, the most valuable of all, the Veterinary Committee, which work in with the Royal Veterinary College. The results of their meetings and deliberations are circulated in the Journal and in other ways. Then medals have been given by the Society to the successful candidates at the annual degree Examinations of the Royal Veterinary College in cattle pathology. As regards dairy work, we have had demonstrations in butter making, given in connection with our shows, and competitions in butter making have also been held at the shows. Lately, what the Royal think is a most useful thing, there have been exhibitions held in connection with the educational work done by the agricultural colleges, and also in forestry. These exhibitions are very largely patronised, and seem to be very popular, and now we have got into touch with the Arboricultural Society, we are issuing a sort of joint medal, so we hope to do still better work in the future than we have done in the past. The colleges, each year, since they have been started, have given an exhibition of their work at the annual show of the Royal Agricultural Society. That is an account of the work up to date.

4872. (*By the Chairman.*) Then I see you give us here the statistics of those candidates who entered and passed for the National Diploma in Dairying and of the candidates who entered and passed for the National Diploma in Agriculture?—That is so.

4873. The number, in 1907, was 93, and the total to whom the Diploma was awarded was 27?—That is so. Of course, it goes in in two parts. The Diploma is only issued after the candidate has passed in the second part. In Part II, 34 went in, and 27 passed, of which one passed with honours.

4874. I see you say six of those 34 candidates passed four of the subjects of Part II. in 1906, and were allowed to come up for examination in that subject only in 1907. What is the meaning of that—"In that subject only"?—If they fail in one subject only, they may go up again. That is in accordance with the rule.

4875. You allow failure in one subject, but not more?—In the second part.

4876. If they fail in more than one subject, they must take the whole again?—Yes.

4877. I see there is an English centre and a Scottish centre. Are the examinations held in both centres?—No. The whole examination is held at Leeds in agriculture. There is a difference between dairying and agriculture.

4878. Why is that?—First of all our English examination was started first. We started at Reading, but they have a very good institute at Kilmarnock, and therefore we thought that the Scottish candidates had better be examined there.

4879. Are the students for the Diploma in Agriculture

4871b

4871c

Mr. J. M.
Dugdale.

29 May, 1907.

4871d

4871a

Mr. J. M.
Dugdale.

29 May, 1907.

generally students from the various colleges?—That is so almost entirely, I believe.

4880. You are prepared to give the Committee some information with regard to the training of elementary school teachers?—I have had a little to do with it for a considerable number of years. I was at the conference once at Bilton Grange, held by a considerable number of elementary schoolmasters, and they said they were only too willing to learn if they could only be taught, and since then some of the county councils have had elementary schoolmasters' classes in the vacation. Those have been a very great success, but I think much more could be done if the schoolmasters were encouraged to give more instruction, particularly in the evenings. I think they are pretty keen about it, especially with regard to nature study and that sort of thing, bee-keeping and little gardens.

4881. You think inspectors could give them more encouragement?—I am sure of it from what they have told me themselves. I should like to explain to you how it arose. It was in this way; I was informed that the readers used in schools were often connected with history, and they thought that in the country schools it would be a good thing if they had readers in connection with animals and things about a farm. Children would learn by reading and at the same time study a little about the stock amongst whom many of them lived. I was told that very often the inspectors did not care about this sort of thing because it involved extra trouble, and therefore the schoolmasters were given a quiet hint sometimes that it might be advisable to drop it.

4882. In your opinion the teaching of agriculture in rural districts should be at evening classes?—I will not say that exactly, but I do not think you could bring it into the everyday teaching because that is very overburdened now. But lots of children would come for bee-keeping, and things like that, and very often those things are hobbies of the schoolmasters, who often take a keen interest in their boys, and they would be glad to give instruction in bee-keeping and poultry keeping and that sort of thing.

4883. You believe in nature study being encouraged in elementary schools?—Yes, particularly the power of observation.

4884. And that special classes for agricultural subjects and dairying might be held on Saturdays?—Yes. They are rather expensive, but I think they might be done fairly cheaply by people who have taken a diploma of a college. For instance, in my own case I held, I think it was one cheese class and about three or four courses in butter-making. I believe Mr. Brooke-Hunt came down on two or three occasions in connection with Bangor, and after that any student who wanted to come say from an intermediate school, coming to my farm, and going to the dairy who had passed the examination, would count.

4885. After he had obtained the diploma?—After he had obtained the diploma. They had to do a certain amount of practical work, and coming to my place would count for doing the practical work instead of going to college.

4886. After having obtained the National Diploma?—No, before; instruction was given to one girl from the intermediate school, but that is the only case.

4887. To what do you attribute that?—I could not tell you. They do not encourage agriculture much in the intermediate schools, I am afraid, in North Wales.

4888. You think that the intermediate schools in Wales might do more for agricultural training?—I think some of them would be very glad to do more. It has been suggested, at any rate, by our head-master—I am chairman of that intermediate school—that some of the smaller schools might specialise a little bit in agriculture, but at present there is nobody who takes it up at all.

4889. You do not think that it would be better to leave those intermediate schools to deal with general education alone. Do you suggest that they should have agricultural departments?—I suggest that they might be encouraged to hold evening classes again.

4890. Not during the day?—No, not during the day, they could not do that; their curriculum is quite overloaded as it is at present. I should use the buildings, and possibly the staff, giving them a little extra for it. They are quite keen about it, and I fancy they would care to do it if they were encouraged.

4891. You are acquainted with the work of the agricultural colleges, do you consider that that is quite satisfactory?—Yes; I think they have done a wonderful work, considering how they are handicapped for money. I know

the North Wales colleges and I know Reading, and I think they have done splendid work. I do not believe they know themselves really what good work they have done. That is my opinion. I have gone round—I have been asked to go instead of one of the lecturers and give a lecture to say 50 or 60 or 70 farmers, or a talk rather, and I have found out that they have been reading about these college experiments, and have been working them for themselves on the quiet, but they would not give themselves away. That is what makes me say that. They will not confess that they have taken any trouble about it, but I have found out in many cases that they are experimenting on their own.

4892. You are in favour of giving expansion to local lectures as much as possible?—I think that is the only means of stirring up enthusiasm. The success of a local lecture depends a great deal on the man who organises the lecture. If he is a good man and whips people up he will have a good audience, and if he is an indifferent man he will only have a poor audience, but still the lecturer has an opportunity of seeing the people who are there and so getting into touch with farmers in the district.

4893. The lecturer must give encouragement to the farmers to take part in a discussion which ought to follow the lecture?—Yes; they always do. They give very practical lectures, and then they ask people in the room to put any questions that they desire to put.

4894. You are of opinion that the Board of Agriculture should summarise and circulate widely the results obtained by experiments which are only circulated locally?—Yes.

4895. You think the Board of Agriculture should be a kind of clearing house, as it were, for all the experiments throughout the country?—That is so, exactly. I could not put it better than that. It would be most valuable. At present there are a lot of experiments of very much the same character conducted in the different centres, and if they were all done on pretty much the same lines you would have a very valuable set of statistics that you could look at and judge for yourself of their value.

4896. You think that the Board of Agriculture should circulate that information free?—Yes, I think they are the best body to undertake that. They now circulate pamphlets which are very valuable.

4897. Do you think the Board of Agriculture also should give the colleges some hints as to the experiments which are required, such as those on grass-land, so that the results can be compared?—What I mean is this: the Board of Agriculture gives grants to these different colleges, and their organisers might quite well say to the principal "Could not you arrange among yourselves to have one of two different experiments going on pretty well on the same lines?" and others, I have no doubt, would be only too glad to fall in with it.

4898. In order to co-ordinate the various experiments?—That is so, so as to avoid overlapping.

4899. Your experience is that the farmers take more interest in the research work?—Yes, that is my experience. Take, for instance, the Harper Adams Agricultural College, where I am; they send farmers every year over the farm; those people come and look at the experiments and criticise them, and the principal tells me that they are coming in increasing numbers every year. They are now amplifying the experiments. They have strips of oats, for instance, right across the field with the name written up large on a board, so that anyone going along the road in a motor or in a cart can see exactly what sort of oats are growing and can judge for himself of the condition.

4900. For what objects, in your opinion, is more money wanted?—Some of these colleges want more money for the staff. Some of the staff are rather under-paid, and the experimental work could be developed, and the equipment of the colleges. It is very difficult to thoroughly equip a college with specimens and all the chemical laboratory apparatus. I am only talking of the Harper Adams College, of course, because that is the college that I know, and they do very valuable experiments there in the way of testing seeds and so on. Farmers bring their seeds to have them tested now, and that is one kind of thing that more money is wanted for. Money is wanted to carry out work on those lines.

4901. In order to further extend the work of the college?—Yes. I do not think you could carry it on on any better lines than it is carried on now. The only thing is that you could amplify it. I think the country generally is getting more confidence in the colleges.

4902. As you point out, the Colonies and foreign countries

spend larger sums of money on agricultural education than are spent in England?—Yes, and not only that, but there is another thing that might be done. When I was connected with the dairy at the Royal—I was chairman for some years—I used to get in touch with people such as Valentine, the butter judge, who went abroad. He went to New Zealand, and got a handsome appointment there under Government, and in Australia, and if anyone was in trouble with their butter or their cheese they used to send and ask him to come and advise them what to do. I believe they carry out that system in the colleges in America and in Canada, so that if a farmer's butter is not quite as good as it might be, or if his cheese is not quite as good as he thinks it ought to be, he can get skilled advice; and in certain parts of England I should think that could easily be done at comparatively little extra expense.

4903. Is it your opinion that winter schools should be increased?—Yes, I think so, because the young people and children could not be spared much in the summer; they could be in the winter.

4904. Do you think farmers would be in favour of sending their sons to those classes in the winter?—Yes, to keep them out of mischief, for one thing. As it is, they send them to choirs and that sort of thing, and they sing—anything to keep them employed in the winter evenings—and I think they would send them, and that is why I think we should utilise the elementary schools; or better still, in the intermediate schools they have the plant, and could teach them the elements of chemistry; they have also a cookery plant in the intermediate schools, and they can teach them cookery, although perhaps that is rather travelling away from agriculture.

4905. You think they should be taught cookery?—Yes, anything like that for evening work, although that is not quite agriculture, and perhaps I ought not to have said that.

4906. You have been acquainted with the work that has been done at Studley Castle, have you not?—Yes, I was acquainted with the work; I was Lady Warwick's chairman at Reading at the start.

4907. Perhaps you will give the Committee some information with regard to the Studley Castle College?—Do you mean with regard to the school itself, or with regard to the whole work?

4908. The whole work.—Lady Warwick started this association for women at Reading. She took a hostel there which she had very nicely furnished for the pupils: there was a very nice garden, and there were greenhouses and so on. Then they took an additional garden and some cottages were built, and skilled instructors in horticulture were brought in and very good practical instruction was given in horticulture. They used to dig and prune and plant the seeds, and pretty well do all their own work. In addition to that they had poultry-keeping, and I believe also bee-keeping, but I am not quite sure about that. They were there at Reading for some time until they rather outgrew the place, and then they moved away to Studley Castle. I ought to say, by-the-by, that at Reading they started a small dairy under Miss La Motte. Miss Crooke taught horticulture there. At Studley Castle, where they have a very fine garden which the pupils keep themselves, and the whole thing is really very well done indeed, and really practical work and instruction are given to those ladies. They also have a very fair dairy there, and a girl if she wanted to, could learn enough to equip her to go out either to take up dairy work, or to manage a small place on her own in horticulture.

4909. Dairy work and horticulture are the chief subjects, are they?—And poultry-keeping.

4910. No agriculture?—I do not think so.

4911. All women?—All women, yes. Miss Bradley was the principal when I was there; I knew her from the start, but now she has gone to a place called Bredons Norton.

4912. It was all practical?—It was mostly practical, but there were lectures given.

4913. Were any lectures given in botany?—That was more at Reading, but I believe there were. I do not know who the instructor is now. I ought to say that Reading College worked hand in hand with Lady Warwick's institute at Reading, and they used to learn their dairy work at the British Dairy Institute first of all before Miss La Motte started. A lot of them were at the Institute.

4914. Was a certificate given at the end of the course?—I believe so, but I am not sure about that.

4915. How long used the course to be at Studley Castle

College?—I could not tell you, but they will be able to give you that information. I may say, in connection with the Hostel at Reading, that I had two ladies from there who made my butter and cheese and who were with me for four years, and they certainly were excellent.

4916. Your opinion is that Studley College is a good one?—An excellent one. I think it supplies a want. There are lots of ladies who have just a little money, and who, by getting that instruction at a place like Studley, are enabled to start on their own. Then, again, some ladies want to know about the management of gardens and poultry, and that sort of thing—independent ladies—and it supplies that want.

4917. (By Lord Moreton.) Will you tell us the objects the two national societies had in view when they started the examinations in agriculture and dairying?—To provide a practical examination for a diploma in agriculture and dairying in this country.

4918. Am I right in thinking that when you started there was rather an idea that there were so many examinations held in England and diplomas given that people could hardly tell the value of any particular examination?—I should hardly like to say that, but it was thought desirable to have a central Board of Examiners first of all and a central examination.

4919. Do you consider on the whole that the system has worked well?—As far as I know I think it has worked very well. We have an increasing number of students coming up to be examined, and another thing, and one which I attach far more importance to myself, is that the people are snapped up directly they have taken our diploma. I look upon the whole thing as of a monetary value, because, if people take our diploma, they are snapped up at once either by the colleges or by outsiders.

4920. Should you be willing to see the whole work taken over by the Board of Agriculture, and an advisory or consultative committee appointed, representing all the various bodies?—Yes, that is just what the Society have wished from the start. They only stepped in because they did not wish to see the good work dropped.

4921. Do you think it would be feasible to make any change in the present form of agricultural examination so as to give it a more definitely practical shape?—Yes; of course the ideal thing is to have it on a farm, and to take the students out with you walking, and you can do the whole thing at once; you could do practical agriculture and botany and everything else as you are walking round.

4922. Do you think more students would present themselves for examination if the examinations could be held in a large number of centres?—That I could not tell you, I have no idea about that, but it would very likely be a stiffer examination.

4923. You mentioned the Royal Agricultural Society's text-book a short time ago. Besides a text-book they have also from time to time published various diagrams, have they not?—Yes, by Miss Ormerod and others—very valuable ones.

4924. Some of those diagrams have been produced in a form in which they can be used, and have been largely used, in elementary schools in the country?—Yes.

4925. Also at present I think the same diagrams and illustrations of the stock in the text-book can be bought in the form of magic-lantern slides?—Yes, at Newman's.

4926. With regard to the Forestry shows that have been held by your Society, until this year there has been no idea of competition at them, has there—it has been more in the way of exhibition merely?—That is all.

4927. This year the Royal Agricultural Society is instituting a new departure in the shape of competitions for which medals are to be awarded?—That is so.

4928. There is one point you may have omitted as regards the educational work of the Society, and that is the farriery work has been done at the various shows?—Yes, I ought to have mentioned that. There is a forge set up there, and we give prizes for shoeing. At each show we have a competition both for heavy horses and for light horses. That is part of the show.

4929. That is done partly under the auspices of the Farriers' Company?—That is so.

4930. (By Dr. Somerville.) Of course, as you know, notwithstanding the fact that the number of candidates for the diploma has grown, there has been a talk of reform in the air?—Yes, for a long time.

4931. Rather in the direction, I think, of making the examinations more practical?—Yes.

Mr. J. M.
Dugdale.
29 May, 1907

Mr. J. M.
Dugdale.
29 May, 1907.

4932. Have you considered whether it would be desirable to cease to examine candidates in the fundamental sciences, and rather for two practical bodies like the Highland and Agricultural Society of Scotland and the Royal Agricultural Society of England to confine themselves to examining candidates in the applied sciences and in the practice of agriculture?—No, I have not thought about that. The idea has been that the Board of Agriculture would at some time or other take it over, and they would go on their own lines and get their own advisers. We have gone on the old line for years. Of course we have tried to make it as practical as we know how to.

4933. There are serious difficulties in the way of making it more practical, of course, but you would, at any rate, have more time for the examinations, and would consequently have more space at your disposal if you accepted some exempting certificate as regards chemistry, botany, and physics?—I see no objection to that. All we want to do is to carry out the wishes of the colleges if we can get them to agree. The only difficulty that I see is this, whether all the certificates of the different colleges would be considered by the colleges themselves as equal.

4934. That would be a matter no doubt for a joint Board to determine?—A joint Board, or representatives of the colleges themselves. The criticisms we have, come from the different colleges; we are only too glad to take any suggestion.

4935. You are altogether in favour of joint experiments?—I think so—I mean to say I think it would be very valuable to people like myself, for instance, to have the results of what the different colleges are doing.

4936. You are rather thinking of the distribution of the information gained?—That is it.

4937. As a matter of fact, the Board of Agriculture are taking steps in that direction, and, I believe, propose issuing a summary of the results that have been obtained with all the mangold experiments conducted throughout this country during the last 20 years. You are also in favour of some systematisation of the work that is carried out by the various centres in the way of experiments?—That is not from my own brain—I mean to say it has been suggested that it might be a good thing if it was brought into a system—the size of the plots, for instance.

4938. And the object?—And the object.

4939. I suppose evidence becomes much more convincing when it is cumulative?—Certainly, I think so.

4940. A single isolated result is scarcely, in many cases, reliable, but if you have some result repeated under varying conditions of soil and climate and over a series of years, it is more conclusive?—Yes. Take clover, for instance. Farmers will do it, but a man cannot grow clover every year, and consequently, at times, it is a great failure. But if you can show, by collecting the results of experiments all over the country that they all fail, the farmer will then listen, but otherwise he is very pig-headed.

4941. Have you seen this book issued by the Board of Agriculture entitled "Manurial and other Agricultural Experiments," and which contains draft schemes for experimentalisation on co-operative lines?—No, I have not.

4942. There was a scheme that was prepared by the Agricultural Education Association that you no doubt know about?—Yes.

4943. And which was submitted in 1903 by the Secretary, Mr. Dymond, and in his covering letter, he says, amongst other things: "At this meeting I was instructed to submit the schemes to the Board of Agriculture and to request, in order to secure their widespread adoption throughout the country, that the Board would print and publish them." The Board did print and publish them, with an introductory memorandum, and they are the drafts, as I have said, of every conceivable demonstration, and it is issued by the Board with the desire of systematising the work. You, yourself, have not come across this?—No, and I have not heard it talked about, either.

4944. Just one word about the position of women in agriculture and horticulture. Do you know of any who have made a practical success of a small holding, either in the direction of horticulture, or poultry keeping, or agriculture?—I do not know, from my own knowledge, but I have heard of people. There is a lady near Dublin who has taken a dairy farm and who is doing very well indeed, and I know another girl, near Ellesmere, who has also done very well—a well-known girl.

4945. Has she done well?—I believe so.

4946. Do you know, as a matter of fact, that she has abandoned her holding.

4947. (By Mr. Medd.) That was agriculture?—Agriculture and dairying. She had a shop in connection with it.

4948. (By Dr. Somerville.) As you know, however, that lady is a great authority on small holdings?—Yes.

4949. (By Mr. Medd.) Do the Royal Agricultural Society still make grants to the Veterinary College?—Yes, a reduced grant.

4950. I would like to know, if you can kindly tell me, the amount of subsidies you now give to education work. Do you subsidise the Veterinary College?—Yes.

4951. If you have not the figures, you might send them after, if you would kindly. Will you kindly supply me, so far as you can, with the amounts that have been contributed to the Royal Veterinary College, the Woburn experimental station, and the Rothamsted?—Yes.*

4952. You have contributed a very large sum for educational purposes?—Yes, in days gone by.

4953. That has been done quite voluntarily?—Yes.

4954. You referred in your evidence to the very large sums given by the State in other countries for educational purposes?—That is so.

4955. The Royal Agricultural Society have been voluntarily undertaking what has been conceived elsewhere to be the duty of the State?—Yes, but others as well—the Bath and West, for instance—have given money.

4956. Yes, we have had evidence from them. With regard to Wales, I think there is a slight inaccuracy in that map, is there not. Radnorshire is now affiliated to Aberystwyth—it has been for the last two years?—That I could not tell you.

4957. Well, it is, as a matter of fact, and it ought to be coloured green. Every county in Wales is affiliated to some collegiate centre for agricultural purposes?—Yes.

4958. That is a consolidated area, so to speak?—Yes. As you ask me that, I must say that the present boundary between Aberystwyth and Bangor is very inconvenient. There is a railway called the Cambrian that goes straight through from Aberystwyth to Whitechurch, which makes it very convenient for persons residing in this part of North Wales to get to Aberystwyth. If we want to go to a meeting, for example, at Bangor, it takes us half a day to get there, and it is very inconvenient for lecturers, and I venture to suggest that it might be a good thing if the Board of Agriculture could approach the two University Colleges and give some of Merionethshire, which abuts right on to Denbigh, to Bangor and take the line above Montgomeryshire a little bit up and bring the line under Denbigh a little bit down. I think that would be very valuable for working purposes, and, I think, it would save a good deal of money.

4959. The northern half of Merionethshire would go to Bangor, and the southern half of Denbigh to Aberystwyth?—That is what I should suggest. There is a range of mountains there called the Berwyn mountains, which forms, practically, a barrier, and the Cambrian railway runs right along, and I do not think it will be taking much away from Bangor if what I suggest can be done.

4960. Do you think it would facilitate the agricultural education of Wales if schemes were annually submitted by Aberystwyth and Bangor to the Board of Agriculture for advice and suggestions to indicate the agricultural education from the elementary school up to the collegiate school?—I did not say that: I said experiments.

4961. With regard to agricultural education itself, there is a gap in Wales, I imagine. You do comparatively little for the son of the small farmer in the way of intermediate education?—That is so.

4962. Do you not think that it would facilitate the filling up of those gaps and prevent overlapping in individual counties if these collegiate centres devised schemes to cover the whole area affiliated to them and submitted those schemes to the Board of Agriculture just for suggestions and advice?—At the present time the colleges give short courses to the sons of farmers, and some very respectable young fellows go there; but it is found in practice, when the student gets there, he knows little or nothing about chemistry, and so they have to begin from the very beginning, whereas, as I suggested to the chairman, if it be possible to give even the most elementary teaching in the intermediate school during the winter months, or at evening classes, then I think it would be a tremendous help

* A statement subsequently received showed that the average annual cost to the R.A.S.E., from 1896 to 1906, of the examinations for the National Diplomas was: Dairying £135, and Agriculture £234; the grants to the Royal Veterinary College, from 1897 to 1907 inclusive, amounted to £4,750; and the cost of the Society's Journal and other publications during the years 1897 to 1906 inclusive was £16,324.

to those boys, who would know something about the various subjects, when they go in for the short courses at the Universities.

4963. Yes, of course I am thinking how the work could be better systematised, so that there should be no gaps in particular areas, and these collegiate centres should be in fact more or less responsible for the education of all the areas connected with them. That is my idea.—I do not see anything against it. I think if it could be done it would be a very good thing.

4964. It has been mentioned here, and some witnesses have approved it, the idea of having a permanent consultative or advisory committee in London composed of representatives from the different counties and different agricultural societies to confer with the Board of Agriculture, and to bring the views of agriculturists before the Board, and bring pressure upon the Board and the Government on their behalf. Do you think that would be a useful thing?—Yes, if you can get the people to attend.

4965. That question of attendance has been raised here, and it has been said that those delegates who attend the Chamber of Agriculture meetings in London most regularly happen to be delegates from the counties of Northumberland and Cumberland, so that the difficulty of attendance may be put upon one side. Now, with regard to literature, you do not get anything from the Board of Agriculture unless you apply for it?—Yes, I do. They send me the new pamphlets from time to time, and I circulate them, although, as a matter of fact, I have not seen that one that Professor Somerville referred to, but I do get pamphlets sent to me from time to time.

4966. Sir Thomas Acland suggested that it would facilitate distribution if the Board of Agriculture were to send copies of their pamphlets to the village post offices throughout the kingdom for distribution?—I am afraid they would not distribute them; I do not think they would take the trouble unless they were paid for it.

4967. The trouble is that it is extremely difficult for the ordinary farmer to obtain literature to-day. If he does not apply for it he will not receive it, and we have the fact that neither you nor Sir Thomas Acland, both of you most prominent men, have even heard of this pamphlet, so that there must be something defective in the system of distribution. Can you suggest any better way of distributing the Board of Agriculture literature?—No, I do not think I can. I always took it that I got my pamphlet because I was connected with the Royal Agricultural Society.

4968. I imagine you at some time or other applied for them, and said, "Please send me so and so," and so your name got upon the list?—Very likely.

4969. But if a man does not apply he will not get them. The consequence is that the literature only goes to the converted people, and the unconverted people, to whom it is most desirable it should go, never get them at all or see them?—I believe there are certain people appointed in the counties as Correspondents for the Board of Agriculture. I do not know whether they do correspond, but if they do, those people might undertake the distribution of the literature.

4970. Have you personally come in contact with any Correspondents?—No, I have not.

4971. Have you found the Correspondents of any benefit to you agriculturally in your neighbourhood?—We get these statistics. For instance, I take the *Journal of the Board of Agriculture*, and I presume they send the statistics there. I find that *Journal* very useful.

4972. It has been mentioned here that possibly a consultative or advisory committee in London would be more practically useful than the system of isolated Correspondents. It would bring all the representative people into touch one with the other, so that one part of England could learn what the other part of England was doing, and so on. With regard to the intermediate schools in Wales, you do not suggest that any attempt should be made to teach agriculture at the schools?—It is in the syllabus, but they do not teach it; they only take a few subjects. The children do not stop long enough; of course some stop longer than others, but they do not remain long.

4973. You take them up to the age of 16 or 17?—Yes, I think so.

4974. What you would prefer, I imagine, is instruction bearing upon rural subjects rather than upon agriculture itself?—Yes, rural subjects—botany and things like that.

4975. Nature study?—Nature study.

4976. Subjects which will develop intelligence and arouse interest in rural life?—That is it.

4977. You would have it taught educationally rather than technically? You would not advocate its being taught with special technical reference to either agriculture or farming?—No, I do not think so.

4978. With regard to the training of the teachers, I notice in Wales that practically is done?—That is so.

4979. It would be possible, would it not, at these collegiate centres to have regular courses?—It would, but the only thing is, it means more money. I have had experience of that. A great friend of mine, the head of the Harper Adams College, gave them in his vacations, and the consequence was that he got knocked up. In my opinion you ought to have a staff specially paid for that individual work, and not make the Principal, who has been working hard all the term, do it in his vacations.

4980. That would be one object for which additional funds are required?—That is so. These people are working all ends up, and have no time to spare, and well deserve their holidays.

4981. With regard to that question of more funds, you are interested in agriculture generally, and more funds are wanted, are they not, to enable those blank spaces on the map to have some form of agricultural education?—Yes.

4982. I live in Gloucestershire, and all our area has nothing—from Warwickshire down to Cornwall there is nothing?—In Monmouth they have quite a good dairy work going on. The Director of Agricultural Education in Monmouthshire, is doing quite good dairy work, and I must say I thought the County Council in Worcestershire was also doing good dairy work.

4983. I think it is only in horticulture. The difficulty is that the Board of Agriculture only takes cognisance of what it subsidises?—That is a different thing. On page 168 of the Report for Worcestershire you will see "Dairying, Poultry-keeping and Bee-keeping." I know they are pretty keen, because Mr. Wheeler, a man I know very well, a great fruit man, is taking great interest in it.

4984. The instruction in Worcestershire and these other counties is all what one may call spasmodic, is it not?—It is annual, is it not?

4985. It moves about from place to place. There is nothing in the nature of a permanent institution?—That is so.

4986. Money would be required for that, and then also you would agree that money is wanted to promote intermediate education, that is to say, for the son of a small farmer, the man who cannot send his son to a collegiate centre?—Yes. In Wales, as I say, we have got them, but they will not take them up.

4987. Those are for general education, and I was referring to purely agricultural instruction?—Then I say with the present staff of the intermediate schools you could not teach them except at evening classes.

4988. I was rather thinking of permanent winter schools. You told Lord Reay that you approved of that idea?—That is on winter evenings.

4989. Not winter day schools?—The schools are all filled up; there are no buildings available.

4990. That is why we want money to provide them?—If you can provide them, by all manner of means.

4991. To-day the son of the small farmer has no opportunity whatever for continuous instruction. Many good lads could afford to go during the winter for perhaps fifteen or twenty weeks, up to the age of eighteen. They do it in Ireland, and they do it a little bit in parts of England. Have you thought whether the Board of Agriculture should provide funds to promote or to subsidise agricultural co-operative societies?—No, I have not thought about that. I have read a good deal about co-operation, and I thoroughly believe, in my heart of hearts, that that is the thing; but there are two sides to that question, you know. Co-operation, of course would smash a great many small village tradesmen. There has been formed near the Harper Adams College a new co-operative branch, with which a brother of mine is connected and most interested in; but they can undersell the local man, who has perhaps been supplying the district for many years, and certainly those people would cease to get any livelihood if co-operation was instituted.

4992. The farmer, as an individual, can generally rely upon a profit by adopting co-operative methods, which he could not obtain by selling his produce individually?—I do not think the farmer would care to sell his produce so much by co-operation. I think he would buy through

Mr. J. M.
Dugdale.
29 May, 1907.

Mr. J. M.
Dugdale.
29 May, 1907.

that means, but, like everybody else, he likes to bargain. Everybody else loves a bargain, and he, I think, prefers to sell his produce himself.

4993. The question is, do you think the Board of Agriculture would be justified in subsidising co-operative societies?—I have no idea of that. I think co-operative societies for buying are all right, but I doubt whether co-operative societies for selling would do.

4994. Earl Carrington, in a very important letter on that subject which he wrote last year, said that if times were better he would invite the Government to put him in possession of funds to subsidise co-operative societies?—In answer to that, you get the answer at once: co-operative societies against the local trader, and why drive the local trader out of existence? That would be the answer at once.

4995. Do you think the inspectors of the Board of Education might show a little sympathy towards rural and agricultural schools?—I think they could do everything. If they would like it done, they could induce schoolmasters to encourage their pupils, by means of little gardens and bee-keeping, and in a way by small poultry-keeping, and so on.

4996. As to Studley, the lady whom Prof. Somerville referred to in the north failed in agriculture rather than horticulture?—Yes.

4997. You have found that ladies trained in horticulture and dairying at Studley have succeeded?—Yes. A friend of mine had a lady gardener, and she succeeded very well.

4998. (*By Prof. Somerville.*) Did she fairly fit into the establishment, because that is the difficulty?—She only had a man under her. She did all the garden work, except the actual hard work of digging and wheeling, and I have been told she was a great success.

4999. The difficulty is to know what to do with them. I have been told they will not go into the kitchen, and they cannot be fitted into the drawing room?—Yes, that is just the difficulty, and that is why it is so different in this country from what it is abroad. The moment people go abroad they will take off their hats and coats, and are not ashamed to do it, and set to work. That is the reason why so many of them go abroad.

5000. (*By Lord Moreton.*) I believe I am right in thinking that, besides the publication of the Journal, which we may look upon as an educational work, from time to time the valuable articles that appear in the Journal, and which are written by eminent authorities, are reprinted and circulated so that they may get into the hands of the members of the public at a very moderate cost?—That is so.

5001. (*By Mr. Davies.*) With regard to the work which is done by the Royal Agricultural Society, I understand you subsidise different colleges?—No, not colleges. It is the Board of Agriculture who do that; we only give so much towards the Royal Veterinary College; I do not know what else we give besides.

5002. What other function does the Agricultural Society fulfil? You had at one time a large chemical department, had you not?—Yes, and we have yet, and anybody can now send samples of all sorts of things to be tested; but the work is now done a great deal by the different county councils themselves.

5003. So that your scope there for useful work has more or less been taken over by other people?—Yes, a good deal.

5004. With regard to the Board of Examiners, are the different colleges represented on that Board?—No, not the different ones. The Board of Agriculture have one representative, and the others are connected with the Royal Agricultural and the Highland Societies.

5005. So that really the professors, the staff at the colleges themselves, had no say in the examination papers which were drawn up for the examinations?—No, not at all. They had a syllabus sent to them, and they were originally consulted, a good many of them, about the syllabus itself, and once the syllabus is drawn, all you want is a good practical examiner.

5006. Do you not think it would be better if the colleges were represented on the Examination Board, and had more to do with setting the papers?—No, I do not think that would work in practice, I think that would be too big. You must trust somebody. There are skilled officials at the Board of Agriculture, and of course there are certainly scientific people connected with the Royal and the Highland.

5007. I know that some of the agricultural departments in the colleges have been very dissatisfied with the results of their students at the examinations?—Very likely.

5008. And they rather blamed the Board of Examiners than their students?—Yes, but sometimes they are wrong, you know.

5009. Mr Medd asked you about a consultative committee being appointed with a view to co-ordinating the different experiments. Do you think that is practicable?—I think the Board of Agriculture could quite well do that themselves; they are absolutely in touch with the different colleges, and they could absolutely do it without consulting anybody. They are in active touch with them day by day. It might be a good thing, but what is everybody's business is nobody's business, and I would rather myself leave it to the Board of Agriculture.

5010. Have you any opinion as to how the leaflets and information should be distributed which is now collected by the Board of Agriculture?—No, not after what I have heard. The same difficulty occurs with other things as well as this, to know how best to do it—with pamphlets of every sort or kind.

5011. With regard to the sphere in which Aberystwyth and Bangor colleges operate, in your opinion Montgomeryshire should be wholly affiliated to the agricultural department at Aberystwyth?—Yes, in my opinion certainly I think it should be divided and a certain part of Merionethshire given in exchange. I think at a round table it could be done quite easily.

5012. There is a committee appointed by the county council?—Yes, but I do not think it does very much.

5013. Some scholarships have been given for short course students who have gone up to the colleges?—Yes.

5014. Do you think these scholarships have been a success?—Yes, I think so. I know a young fellow on the adjoining farm to me, an excellent young chap, and he has been there.

5015. Is it not the fact that a good many of those scholarships have not even been applied for?—Yes, the good of these people going down and giving local lectures is that they stir up enthusiasm; and people have to be shown that they can get an advantage by education. A man will not go and spend his time unless he can see that there is money in it.

5016. Does it not really come to this, that the sons of farmers who could have afforded to send their boys to the agricultural colleges have really had to be paid in order to send them? They would not send them without these scholarships?—It is the same question, whether it pays to devote the time to learning. If learning is any use and will bring them money in, then they will go and learn, but if they think otherwise then they will not go.

5017. Is there not a possibility that the scholarships do more harm than good, in this way, that the small farmer who cannot afford to pay sees other men's sons who can afford to pay, getting their instruction for nothing and they take less interest perhaps in the work for that reason?—I should not like to say that. I think means could be found for paying the smaller men if they want it.

5018. Do you think a circulating agricultural library would be any use to small farmers?—No. You see, nowadays there is a very able article, as a rule, written, and very well too, in each of the local papers, and the farmers read that. It is a very good little article, about a couple of columns, in all the Montgomeryshire papers—they are published not very far from you—and they are quite readable.

5019. Supposing each college had a big library and they were able to circulate agricultural text-books to any farmer who wanted them, what would be your opinion as to the value of that?—It would be a very good thing if they could do so.

5020. I understand with regard to the intermediate schools, you do not think they ought to teach any definite agricultural education?—Not unless it is a definite agricultural school. I do not see how they could do so, because so many people are going in for so many different things. They would have to specialise, and the staff is too small and could not stand the extra work.

5021. Do you not think they might do something in the way of dividing the school into a modern side and a technical side, and teach chemistry and botany, and so on?—Chemistry is taught; I do not know whether botany is.

5022. With a view of fitting those young farmers for

higher agricultural education?—It is only elementary chemistry that is taught, and it would only be as an adjunct, to fit them to go into the agricultural college.

5023. (*By Lord Moreton.*) From time to time the National Diploma Board have taken counsel with representatives of the association of agricultural teachers, have they not?—Yes.

5024. And may I put it to you that we can never hope to draw up a syllabus or to fix upon a date for examinations which would suit all the various colleges and centres?—No, certainly not. I do not think we could; it is very difficult; it all depends on their different terms.

5025. Do you think if examinations were held, as I suggested to you a little time ago, at various centres, that that difficulty might possibly be got over?—I am not an examination expert; I am merely an organiser.

5026. You have had very considerable knowledge and experience of that subject?—Of course, if you did away with the chemistry work and the botanical, it could be done at any time; the examiners could go round at any time.

5027. (*By the Chairman.*) Can you give us any suggestion with regard to these Correspondents of the Board of Agriculture? Could they not be made more useful than they are?—I do not exactly know what they do, to tell the

truth. They are supposed to send up statistics, but I do not know how it works. It is rather a tie to do things of that sort. The way the agricultural papers do it is this; they send a form to myself and to other people to fill up as to the lambing and as to the weather and that sort of thing, and so collect the information.

5028. Do you think this system of correspondents might be made a very useful one?—Certainly,

5029. With a view of spreading information?—Yes. Of course other people or land agents might be got who would distribute the literature among the tenants; I think that might be done.

5030. You do not meet the Correspondents of the Board of Agriculture at farmers' clubs or meetings, do you?—No. You see, I am too busy, and I do not often go to those meetings or to the farmers' clubs—only the shows.

5031. Then as a matter of fact you do not meet the Correspondents?—No. I should think a good active bailiff or an agent who goes to market would be the best sort of people to take up that work.

5032. People who are in touch with the farmers?—That is so.

5033. There are a number of suitable men in the country?—Yes.

Mr. J. M.
Dugdale.
29 May. 1907.

Mr. WALTER E. COLLINGE, M.Sc., called and examined.

5034. (*By the Chairman.*) You are the Head of the Department of Economic Zoology at the University of Birmingham?—That is so.

5035. You are prepared to give the Committee a brief account of the work done from 1899 to 1906, which led up to the formation of a Department of Economic Zoology in that University?—Yes. The work that was done in economic zoology, prior to the foundation of this department, was done whilst I was Lecturer on Zoology and Comparative Anatomy at the University of Birmingham. It commenced in 1899 and was, practically, done in spare time. My method was to go and meet the farmers, particularly so on market days, in the counties of Warwick, Worcester and Stafford, and just on the borders of Shropshire and Gloucestershire. Worcester, Warwick and Stafford were the three main counties. In that way I became acquainted with a large number of farmers and fruit growers, who at first rather resented any interference or any advice with regard to pests in orchards or to parasites of cattle or anything in that way, but little by little, when they found there was no charge made and they had nothing to pay for the advice, and that they possibly profited by the advice, they became more and more amenable to meeting me from time to time, and we got on very well. The method I at first tried was to go to the different towns on a market day and, either by an introduction from some friend or from some local farmer, I used to get to know one or two of the farmers and then to cultivate the farmers in that particular district from time to time. This work grew, and in the year 1903 there were 189 actual inquiries made by post from these different farmers; in 1904 there were 325; and in 1905, 479. This, I think, shows that they appreciated the work, and it also, I think, is some evidence that there was need for that class of work in that particular district. In 1906 that was the last year before the foundation of this department which I preside over, the number of enquiries rose to 1,171, and this year they will probably exceed that number by two or three hundred, I think. The University saw that there was a need for this class of work, and they established the Department of Economic Zoology. In connection with that department they have also established an Advisory Board. The recommendation from the Senate was as follows: "That an Advisory Board be established to consult with the University on questions relating to the Department of Economic Zoology; to make suggestions as to its enlargement and development, and, as to the future policy of the University, with regard to agriculture and allied subjects, the Board to report to the Faculty of Science, Senate, and Council." That Board has now been formed and consists of representatives of seven Midland county councils, and a number of agriculturists have been co-opted and certain University officials. The Department of Economic Zoology at present consists only of myself and an assistant, but there is a recommendation coming before the Council

for the appointment of an economic mycologist, an assistant zoologist and a typist. The department has sent out cards of this description to the different farmers. (*Handing in cards.*) We ask them to fill them up and return them to the department, and we then place them upon a register, and in that way we know the particular crops that the farmer is interested in, or the particular stock, and we furnish him, from time to time, with circulars, bulletins and other literature. The scope of the work which the Department is at present carrying out is as follows: (1) The answering of enquiries from farmers, fruit-growers, gardeners, &c., as to preventive and remedial treatment for diseases of plants due to the depredations of animals or fungi, and diseases of live stock due to animal parasites. (2) The identification of common farm pests. (3) The carrying out of experiments as to the value of different insecticides and fungicides. (4) The carrying out of investigations upon the life histories of various insects, &c., hitherto not known or only imperfectly so. (5) Lecturing before different agricultural and horticultural societies, fruit-growers' organisations, chambers of agriculture, &c., and a short course of lectures at the University for gardeners. (6) Conferring with and advising agricultural committees of various bodies upon subjects relating to economic biology. (7) Inspecting orchards and farm crops attacked by different pests. (8) The publication of the results of experiments in the form of circulars or reports, or of other information for which there appears a demand. The number of reports, circulars, &c., which have been published and issued, in addition to a large number circulated by the Board of Agriculture and Fisheries, in 1903 was 1,000; in 1904, 1,500 were distributed; in 1905, 1,200 were distributed; and in 1906, 3,000. I have copies here of the various publications which have been sent out from the Department. To facilitate the work above mentioned it is necessary that the following matters be kept up to date, and this has been largely carried out: (1) The preparation of a card catalogue register of the farmers, fruit-growers, &c., of the Midland Counties, giving their names, addresses, and the particular crops, &c., they are interested in, or the different kinds of live stock. (2) The bringing together and preparation of a collection of the different pests, or of examples of their depredations. (3) The bringing together and preparation of systematic collections illustrative of animals beneficial or injurious to the farmer, fruit-grower, stock-breeder, gardener, &c. (3) On these lines the work is increasing monthly, and now more than fully occupies the present staff. (4) There is a pressing need and a wide field for work in all the sides taken up, viz., injurious and beneficial animals, animal diseases, and economic mycology. The extent to which such work can be carried out in the future depends almost entirely on the strength of the staff, the financial means, and the amount of accommodation the University can provide. I have laid my views before the Principal of the University and

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Mr. W. E.
Collinge.

29 May, 1907.

others—of course, they do not in any way implicate them, but I believe they will be more or less followed. For the future development of the Department, and for the future development of agricultural education in the University, I have suggested, and it has been considered, as I have stated, the appointment of a general clerk, an assistant mycologist, and an assistant zoologist. I hope they will obtain an experimental farm and group their agricultural department round that farm, the laboratories, a library, and a museum. No teaching work, I believe, will be done, unless it is teaching work of a much higher nature than that given at any of the county council schools or the colleges in the Midland Counties; that is to say, it will be a course leading to a science degree in agriculture for agricultural students. The work, I hope, will be mainly on the biological side, embracing plant and animal diseases, plant and animal breeding, the breeding of new varieties, the establishing of the purity of breed, the application of Mendel's law to agriculture, and the biology of the soil.

5036. Mainly research work?—Research, experimental, and consultative. Wherever possible, I think the work would be of a biological kind. Of course, I presume the University will provide also a department in which the chemical side will be taken up. But it seems to me from the experience I have had during the last nine or ten years at the biological side in this country, both from the teaching, the research and the experimental point of view, as been woefully neglected, and it is the side, I think, from which the farmer and the stock breeder is most likely to gain. I have endeavoured, therefore, to use any weight I have, and the weight of others, with the Council of the University to keep before them the biological side rather than the chemical and the manurial side. No elementary teaching in any sense will be undertaken. I think the Council are agreed on that, and I do not think they will attempt it in any way whatever. The present department is not situated in the actual University; it occupies a separate building, consisting of a clerk's office, a research laboratory, a small museum—more a storage museum rather than for show purposes—and a consulting room, which also serves the purpose of a library. I have placed in the library for the time being 3,000 works of my own, which the University has the use of. I may say that the expense to the University at the present time is about £400 for the upkeep of this department, and the University have no funds which they can spend upon agricultural research or experiments. Of that £400, £50 is guaranteed for three years by Sir John Brunner.

5037. Do you obtain any grant from the Board of Agriculture?—No, we have no grant.

5038. Have you any grant from the county councils?—No, not as yet, but we are asking grants from Stafford, Warwickshire, Worcester, Leicester, Shropshire, Herefordshire, and Derby. We are asking them each for a grant. We have their representatives on the Advisory Board for Agriculture, and we have asked them to bring the matter before their respective councils.

5039. Is there a prospect of obtaining those?—I do not think we shall get them immediately from more than three, that is Worcester, Warwick, and Stafford.

5040. Have you any students at the University who attend in the laboratory?—No.

5041. Do you give any lectures?—Not of a teaching nature; they are lectures more for the giving of advice to the farmers and fruit-growers at the different chambers of agriculture, etc.

5042. There is no regular course of lectures?—No regular course of lectures.

5043. Your position is principally consultative?—Yes.

5044. And you carry on research?—Yes.

5045. Your opinion is that biology has been very much neglected?—I think very much so.

5046. As compared with what is done in Germany and other countries?—Yes, America particularly.

5047. You have also applied to the Board of Agriculture, I am informed, for a grant?—We have applied—the Principal of the University applied—but they did not think the time was opportune, and I think Sir Thomas Elliott said that there was no possibility at that time of any grant being made.

5048. From what you have stated, and from these cards that you have handed in to us that you send out, and the answers that you have received, that part of your work seems to have been very satisfactory?—Yes. These cards were issued at the end of October, and we have had something like 600 of them returned. Of course, previous

to that I had on the register the names of a large number of farmers, I think altogether about one to two thousand.

5049. You are yourself constantly going to these various counties whenever your advice is asked for?—Yes, and if there were further assistants in the Department I could spend more time in that way.

5050. If you had more assistance in your Department at Birmingham you would spend more time on those excursions?—Yes.

5051. You think that is the most useful part of your work?—Undoubtedly. Speaking for the Midland farmer, he has very little faith in anybody who will not come, to use a local phrase, “and plant his feet on the soil”—that is what he likes.

5052. You are of opinion that, in order to stimulate the desire for agricultural education among the farmers themselves, that is one of the best means that can be applied?—I think so.

5053. The result of your visit is also to make them realise that they should send their sons to the colleges?—Yes. I should explain, supposing I received a request to go to Herefordshire, or Worcester, or Warwick, after going down and telling the fruit-grower what he had best do, I then send in a typed report so that he may have it for future reference. We send that off the same evening or the first thing next morning.

5054. All the results of your enquiries are collected and printed?—Yes.

5055. Those are printed by the University, are they?—No, I pay the cost of the printing. From 1899 up to the present date I have spent some £690 on the cost of printing and distribution of reports, and of course prior to the foundation of this Department on travelling expenses.

5056. All this expense fell upon you?—Entirely.

5057. You did that from a philanthropic motive?—Simply because of my interest in the subject. Of course no funds could be allotted to a department which did not exist.

5058. Of course it would be desirable to have some funds allotted for that purpose?—Certainly. I have made representations to the University, and that will have to come about if the publications are to continue.

5059. I understand from your evidence that the University contemplate the formation of an agricultural department?—In the future.

5060. It is only the want of funds that has prevented that?—Yes.

5061. What is the College at present to which the farmers in those counties that you have mentioned send their sons?—There is the College at Kingston, Derby. There is another in Shropshire, the Harper Adams Agricultural College, and there is, of course, the one at Cirencester in Gloucester, but Gloucester is not in our area now. I included Gloucester for some years, and worked Gloucestershire very well, but Bristol University made representations and said they would prefer to take Gloucester for the scheme they are at present considering, and so we dropped Gloucester, so that there are really only two colleges—the Harper Adams in Shropshire, and the one at Kingston, Derby.

5062. It would be of value to the Committee if you were to give the Committee your views as to the organisation of such an agricultural department as you have intimated. I dare say you have considered that subject?—I should organise it purely or very largely from the biological side. I should undertake for the farmer experiments on the crossing and breeding of plants and different fruits and the application of Mendel's law for the purity in strain both for the different breeds of cattle and sheep and fowls and so on, and I should also continue the experiments on insecticides and fungicides for diseases of plants, both those attacked by fungi and those attacked by animals, and I should also, in the event of such a department being founded, open up negotiations with the different County Councils so that they might from time to time send the best of their students to such an institution and remain there. On the presumption that the County Councils are giving a grant to the University for the maintenance of such an agricultural department, I should admit such students either at a very low fee or practically free and ask the Councils to defray their travelling expenses and pay the cost of their board in the district. I should like those students to remain in the institution say for two or three weeks—not a long course, but a short course—and let them go day by day through a course of seeing the experiments as they are carried out, and certain explanations

would be given them, and also printed details of the experiments, and they would be allowed to take notes, so that supposing they were going to become, say, the better class farmers, they would set an example to the smaller class farmers, and they would also know the lines of the experiments and the work carried out by such an institution and could disseminate such information.

5063. Such students should have a carefully laid foundation in pure science, I suppose?—Yes, I take it that the County Councils would only invite the very best students.

5064a. Your idea is that an agricultural student should be a student of a high educational class?—Yes, agriculture is a deep study, and you want on the land, just as in any other calling in life, a man of brain, and if you do not put that man on the land agriculture will not be a success in this country. Therefore you must give the man exactly the same standard of education as you would do supposing you were going to turn him out as a medical man, a lawyer or an engineer. That I do not think has been done in this country. The agricultural instruction, so far as I can see, that has been given in this country is of a very poor nature indeed; in fact, I should not hesitate to say that in some of the agricultural colleges in this country the instructor is only a page in front of the student, and very much of the experimental work that is being done is, I think, useless and quite valueless so far as the farmer is concerned, because the men who are working these experiments have not the training necessary for the proper carrying out of such scientific experiments. The manuring experiments and so on that are being carried out now have no bearing on other parts of the country and only apply locally, and when the report is published of them no information is given as to the analysis of the soil so that a farmer can have his own soil analysed and compare the result, say in Wales or the north of England, with the condition in the midland counties.

5065. Therefore your view is that the Board of Agriculture might do a very useful work in drawing up a scheme in regard to such experiments as you describe and as to how they should be carried out, and that the Board of Agriculture should consult you and those like yourself who are moving in that direction?—Yes, I think so. I think, before these colleges carry out experiments, the experiments should really be mapped out for them and they should know upon what lines they are to work.

5066. Your view is that the experiments which are now carried out by the various colleges throughout the country are not on a sound basis?—That is so, with one or two exceptions, such as Cambridge and Newcastle, and possibly Wye.

5067. You consider that that work requires overhauling?—I do.

5068a. What view do you take of the education which is given at the various agricultural colleges to the students?—I do not think, looking at it from my standpoint, that the curriculum which is laid down at the agricultural colleges in this country is a good one. In many of the colleges you will find, for instance, that the man who is teaching your son economic zoology is also the lecturer on economic biology, and botany, and probably teaching mathematics and mechanical engineering as well. It is quite an impossibility, in my opinion, for a man, in the rapid progress which is taking place in economic biology at the present day, to keep pace with that in all of these subjects—I am not speaking of the actual research work—to make himself acquainted with the results in so far as they bear upon his teaching, and how a man is possibly going to teach all those subjects I fail to see, and, as I say, I do not think the teacher very often is more than a page in advance of the student, and I must say the information given to the student is very often of a mischievous nature. I have heard that opinion expressed by farmers in different parts of the country.

5069. You think that further specialisation is required?—Yes, I think the work wants mapping out. I may look at it with a prejudiced eye, because I look at it from the biological standpoint, but my opinion is that the farmer is concerned mainly with plants and animals and the soil in which the plants are cultivated, and I take it that what he wishes to do if he cultivates a crop is to preserve it, and in the same way to get the maximum yield with the minimum amount of expense. If the curriculum in these different colleges was mapped out on the lines I suggest, it would bear more directly on the everyday practical work of farming. I should suggest questions in an elementary form as to plant breeding and as to chemistry and the physiology of the plant and of the animal, and of the application of general biological science to agricul-

ture. Those, I think, should be the main subjects. Then the students should also receive a certain amount of information on what is commonly termed now pure agriculture: that is the rotation of crops, the manuring of land, the chemistry of the soil and the drainage and measurement and so on of the land; but it seems to me that the biological side at present is put in the background, and I think I may say without hesitation that, apart from Wye and Cambridge, there is no college in connection even with the universities in this country where there is a specialist who teaches either the botanical or the zoological side. I think we are finding out in this country, as they have found out in America, that the moment a university or a college decides to have an agricultural department, with a professor of chemistry and a professor of botany and zoology who takes under his teaching the agricultural side of those subjects, it must end in absolute failure. The man is a specialist in morphology and physiology, and while those subjects may form the basis of any future work or application of the work, still that is not the man who is likely to apply the knowledge or be of any practical use in teaching the agriculturist, or to carry out experiments for the agriculturist. It has been very clearly shown in every university in America where they have established an agricultural department, I think without exception, that they have all had to put up a separate agricultural college and man it by specialists, and in some of the agricultural colleges there they have as many as five biologists on the staff—the subject of biology is split up into five departments and there is a specialist in each one; and in addition to a botanist and a mycologist they have specialists in horticulture in relation to the cultivation of fruit crops, and there is no question of the value of the work they are doing in the United States and the results they obtain. I do not think anyone in the world doubts for a moment the value of their work.

5070. Can you tell us where in America is the institution which you are describing?—Practically in every State there is an agricultural college of that description.

5071. On the lines that you have described?—Yes: certainly, speaking from memory, there are at least 40 or 50 such colleges.

5072. With the biological department fully developed?—Yes.

5073. That is the result of experience and the practical demand for agriculture in America?—Yes.

5074. You say that the farmers in England are very much alive to the necessity of further development in this direction?—Yes. Of course the thing the farmer is interested in principally is the financial result, and he can at once see there is a monetary benefit in knowledge of this kind. The difficulty I had when I first commenced with this work in the midlands was to carry out experiments on a large scale, say in orchards of 17 or 20 acres. No farmer would carry them out unless you agreed to guarantee the crop—if you agreed to guarantee the crop he would let you carry them out—but I have not the slightest difficulty now in that respect. I have five or six farmers who will keep at my disposal anything between five and ten acres on their farms for purely experimental purposes. In the Evesham district quite recently they have taken up the subject of spraying. The Worcestershire County Council have taken some interest in the matter and have appointed a man from Wye College to undertake certain experiments, the value of which seems at present somewhat doubtful. I went down into the Evesham district—I was invited by the Evesham Fruit Pest Committee to go down there and to explain to them the method and practice of spraying. I went down and gave a practical demonstration on an orchard, and I had about 70 of the younger growers present, and judging from the number of applications that I have had since, it seems that fully two-thirds of those men profited by the advice I gave them and have applied it. I am frequently receiving letters thanking me for advice from farmers and saying how well their crops look and how much they have profited by it.

5075. (By Mr. Medd.) Do I understand that you give your services quite gratuitously?—Quite.

5076. The whole expenditure that the University is involved in at present is only £400 a year?—Yes.

5077. You mentioned Stafford, Warwick, and Worcester as possible contributors. Which are the other four counties: you mentioned seven altogether?—Derby, Leicester, Shropshire, and Hereford.

5078. Is each of those counties represented to-day on

Mr. W. E.
Collinge.
—
29 May, 1907.

5069a

Mr. W. E. Collinge.
29 May, 1907. your Committee?—All except Hereford. The Hereford representative is the President of the Hereford Fruit Growers' Association. The County Council have not appointed their representative yet.

5079. The others each have one?—Yes.

5080. How is the £400 applied?—At present there is £200 which is my own stipend; the rent of rooms, exclusive of rates, taxes and water, comes to about £85—I am just speaking from memory now, I have not got the exact amount because we have not completed twelve months in the building yet; the assistant in the laboratory £20, the laboratory grant £20, the distribution of reports £15 and travelling expenses about £25.

5081. Have you formed any estimate yet of the capital expenditure likely to be required to set you going as an Agricultural Department?—Not as an Agricultural Department.

5082. Have you formed any idea as to the annual cost of maintenance? What would probably be the sum you would require for that?—Not for an Agricultural Department, but for a fully equipped Department of Economic Biology I have.

5083. What would that cost?—£2,000 a year.

5084. You could do it well for £2,000 a year?—Yes.

ELEVENTH DAY.

Thursday, 30th May, 1907.

PRESENT :

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

Lord MORETON.
Mr. THOMAS LATHAM.
Mr. J. C. MEDD.

Professor WILLIAM SOMERVILLE, D.Sc.
Mr. A. E. BROOKE-HUNT (*Secretary*).
Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. D. T. COWAN, called and examined.

Mr. D. T. Cowan.
30 May, 1907

5085. (*By the Chairman.*) You are the Director of Education for the Hants County Council?—Yes.

5086. I understand you are prepared to give this Committee some evidence with regard first of all to the history of the formation of the Hants Farm School at Basing?—Yes. The school was started in 1889, but was the outcome of a very careful study of work that had been done in other counties. That study had extended over about three years, one way or another, the Committee not being quite satisfied for some time as to the type of school that would be most helpful to the county. Every type of agricultural school that had already been started in England was visited and some time spent at it. It seemed to me at the time in advising the Committee that our county could not itself start a very large institution, and that only a few institutions of the type that ultimately developed at Reading could be of service to the county. It seemed also that if you wanted a kind of intermediate school between the higher institutions and the elementary or secondary schools, as the case may be, you should have something that, without being too technical, without providing too scientific an education, would in a way continue certain of the best features found in the old apprenticeship system—I mean of the time when the apprenticeship system did mean a boy coming under a master who could and would teach his business. The Committee eventually agreed with the view I expressed on that point, and so we started the Basing School, which, I would wish you to understand, is really a very humble affair. If you take away the educational side—where the staff must be to a certain extent costly to be of any real service—the place is simply run as a small farm. When I tell you that the whole labour is simply a carter and a cowman, that is the beginning and end of it.

5087. (*By Lord Moreton.*) What is the acreage?—It is 71 acres.

5088. (*By the Chairman.*) That is briefly the history of the place?—Yes. The attempt was to make the fields the class-room, so that a boy in carrying out his work and in meeting with practical difficulties would have these difficulties explained and remedied as much as possible on the spot. The difficulties were further dealt with afterwards in the class-room, which room I may explain simply consists of one corrugated iron shed. There is another point I should mention. It seemed to my Committee that if that were the proper type of school to form a link between the higher and the lower institutions, it was undesirable to spend a large sum in erecting extensive buildings. The whole of the class-room buildings cost under £100. We did not find a dairy in the place, but we built one with materials supplied by the landlord at a cost of, I think, £350; the landlord supplied the materials and the Committee the workmen. There were some old dilapidated buildings which we converted into hen runs. We had more cartage room than we required, and this was converted by the students themselves during their second year into fowl-houses. We taught them carpentry, and it seemed to us that the best form of giving a practical application to that instruction was to give them something practical to do, so under our own instructor the students did most of the work in altering these buildings and fitting them to the needs of the school. That is practically in brief the history of our small institution. There is one other point I should like to mention, and it is this: it never struck me that the school was quite in the right place, but at the time there was great opposition on the part of the County Council to any movement in that direction, and in order to start the school at all we had to introduce a minimum for their consideration. Nevertheless one would have liked the school to be nearer the centre of the county, where perhaps we would have been on more typical soil. Basing is rather to the north of the county, the land

Mr. D. T.
Cowan.

30 May, 1907

being a kind of loam on a gravel subsoil, and partly loamy clay on a stiff subsoil of clay. The farm is in the valley of Loddon, where the clay beds run down to meet the Reading beds, and it is largely alluvial. The farm, as I have stated, is 71 acres in extent. It has 38 acres of grass and 33 of arable land. Fifteen acres of the grass consist of dry meadow and the rest of water meadow.

5088c With regard to buildings, we had no sleeping accommodation for our students, but by luck there fell to us the opportunity of getting a house in the village which had been built by a tradesman who wanted to retire there, and who didn't. We simply rented it, and have done so ever since. We can sleep 14 or 16 students there, as the building is rather like a town house, and, curiously enough, it is upon the farm land. That was a little piece of good fortune for us.

5089. Is there accommodation usually obtainable for other students?—We have three cottages as well, worth from £9 10s. to £12 per annum each, and we can put some additional students in them if necessary, but not very many.

5090a 5090. What is the course of study?—The course of study is made to suit the student who wants to go back to the land, and to take off his coat and work. It is not a place for the type of students who want to become land agents or teachers of agriculture and so forth. It is fitted, I think, really and only for the practical farmer. Therefore quite three-fourths of our work is practical work, the ordinary farm operations with a good course on dairying, to include cheese-making, and with a small but well-fitted agricultural department. Our gardens consist of only about 1½ acres. We lay ourselves out to take the sons and daughters of small farmers. The sons of some larger farmers come to us in certain cases, but we chiefly get people who want small holdings or go in for dairying and market gardening. I do not know that I need describe each of our operations, but I have indicated our aim, and shown that the work is largely practical. I may mention that we will have no students who will not get up at 6 o'clock in the morning to work. Anyone who will not do that is of no use to us, and we don't want him. Therefore the dilettanti type of students who want a little knowledge and little work will hardly find Basing the best place for them. We make no difference amongst the students, they must all be up early. A good deal of our field instruction is done in the morning, as well as milking the cows, bringing the milk to the dairy, and looking after the general work of the farm and garden. I hope the Committee will permit me to place before you later some evidence as to the actual type of students who have come. I have taken some trouble to follow the ultimate careers of these students, and have been able to trace over 200. I have tabulated these and would like to place the results before the Committee, so that you may judge whether our ideal of fitting the worker for the land has at all been fulfilled.

5091. Is there any entrance examination?—No, except that we usually take care that the students can read and write and do some arithmetic. Even with our scholarships the examination is chiefly a test of fitness to take notes and to intelligently follow the lectures.

5092. Of what does the school staff consist?—The resident staff consists of the headmaster and the dairy instructor, who has charge of the dairy, the butter and the cheese-making. The headmaster comes of a farming stock, his grandfather having been a farmer, and he himself being a gardener. That is all the resident staff, but we have a good travelling staff who periodically inspect in rotation certain work, and take particular subjects before moving on. We work the school economically by means of the travelling staff.

5093. (By Lord Moreton.) You mean a travelling staff under the County Council?—Yes. They include a horticultural lecturer, and a lecturer on horse-shoeing. We send our farrier to show what proper horse-shoeing is, not with a view to turning the students into smiths, but because we want them to realise that it leads to greater usefulness on the part of the horses if the feet of the animals are properly attended to. We have got a forge and the necessary tools in a shed, and the farrier gives as many lessons as he can once a week or a fortnight as the case may be. He also gives some instruction as to the structure of the hoof, so that the students may not regard it as if it were a block of wood.

5094. (By the Chairman.) Do the headmaster and the dairyman travel?—No; they are the resident staff. The whole labour of the place consists of a horseman and cowman. A working gardener in the garden under the travelling horticultural lecturer, and at such times as hay-making and harvest of course we have some extra labour.

5095. Do the students pay fees?—Yes, all the students pay some fees.

5096. Even the scholars?—Yes. The fee to anyone resident in the county, who is farming or doing practical work on the land or dairying is 10s. per week inclusive of board, lodging and tuition. If the student is a person only indirectly connected with the practical side of farming, the charge is 15s. per week, and to students from outside the county the charge is 25s. per week inclusive. The scholars are educated and boarded, but they pay 2s. 6d. a week to cover some small expenses.

5097. Are the scholars all resident on the farm?—Yes.

5098. But not the other students?—They are all resident.

5099. Do they live in these cottages and in the boarding house?—Yes; they are all under the same control.

5100. Have you a grant from the Board of Agriculture?—We got our first grant in March of last year. We did not press the matter earlier, because we rather thought we were not an important enough institution to be recognised by the Board. We had no big laboratory fitted up, or anything like that. Our aim was really to bring into the farm the best of the old apprenticeship system, if possible, plus a certain amount of science, including milk analysis and suggestions about manuring; but we did not at first approach the Board about it. When we did do so they met us generously and at once gave us £100 last year, and again this year.

5101. Is the county responsible for the financing of the school?—Yes.

5102. Is everything else paid by the county?—We received in fees and sales of butter and farm produce last year about £850, and the cost to the county was £650—the nett cost—but that includes the staff, the headmaster, dairyman, &c.

5103. What is the rent paid for the farm?—The rent is £75.

5104. (By Lord Moreton.) Does that cover all, free of tithes, &c.?—Yes.

5105. (By the Chairman.) Do you teach the students any book-keeping?—Yes; the course includes book-keeping. Apart from the books which we have to keep for the Local Government audit, there is a complete set of farm books, showing the whole expenditure, and they are open to the students if they care to examine them, with the consent of the headmaster. Book-keeping is an important feature of our work.

5106. Who gives that instruction?—The headmaster, who has himself been in the position of manager of a big market gardener's place, and who is accustomed to the business side.

5107. Do you teach botany or chemistry?—Yes, we teach a combination of botany and the elements of physics and chemistry. We teach these things, so far as we can, practically. We are not trying to make our students scientific persons, but to make them understand the value of science, to have the scientific attitude of mind.

5108. You give as much time as is necessary to illustrate the various processes of agriculture?—That is so.

5109. Do any of your students afterwards go to the Reading College?—Yes, and I would like to point out that our school plays an important part in linking up our work with Reading College. Before our school was started, we tried to send students to Reading direct without any intermediate institution, and, although we advertised three years, we only had one young man anxious to go to Reading direct, and his father was in a position to send him without our help at all. Our attempt was then a dead failure, but whenever our school was started as a link we always had farmers' sons ready or anxious to go to Reading. We have a butter school travelling summer and winter, and sometimes making butter in sheds when the thermometer is precious low. We desire to teach the students to make butter under all conditions. The horticultural lecturer travels and gives instruction to allotment holders. There are a certain number of exhibitions tenable at the farm school, and there are six scholarships offered to the sons of farmers or bailiffs for the butter course. The best of the students are sent on to Reading. We have only two scholarships to Reading, but there is keen competition for them. The examination is conducted by the Reading College. We have never, since we started, failed to find a keen interest taken in the work done at Reading. An interesting point is that many of the students sent to Reading with these scholarships go back to the land. If a farmer's son wants to go to Reading with our help, he must go through our school first.

5109a

Mr. D. T.
Cowan.

30 May, 1907

5110. What is the length of the ordinary course ?—The course is six months. The students come in on the 1st of October and remain till the end of March.

5111. Do they get a certificate at the end ?—If they pass an examination conducted by the Reading College.

5112. Do they return afterwards to the school ?—Yes, some of them do. We have about half a dozen students who have returned, but our difficulty is this, that the students who come most of them are sacrificing wages to come, that is, they are boys who are earning, it may be, 7s. or 10s. a week, and it is not an easy thing to persuade a boy or persuade his parents to give up that in order to come for six months, but they have done it, and, practically, 70 per cent of the boys were, what one might call, wage earners with their fathers. To give you a recent example, there was a boy who was earning 10s. a week, and a very useful boy to his father, but I saw his father and he said he would send his boy, and he did send him for six months, and I have a letter stating how much benefit he received from the instruction. But that alone, you see, will prevent the boys returning again in any large numbers.

5113. In the summer ?—Yes: some of them do for cheese-making. Hard cheese-making is only done in the summer because we have no artificial heat in the place, and you cannot make Cheddar cheese without artificial heat, so we only make it in the summer, beginning about May on to about August.

5114. I understand you only have a very limited number of students in the summer ?—We take girl students in, you know. In the winter we work boys mainly, but in the summer we work boys and girls, so that we have a good number of the summer students.

5115. Then you have both a winter course and a summer course ?—Yes. The summer course is divided into short courses for special subjects, chiefly dairying, but we have as well short courses in horticulture, practical grafting, and one might also say, a nature study in a large way, and we have domestic work. For instance, supposing a girl wants to marry a farmer, and we have several, they come to us for dairying, gardening, cooking, laundry work and house-keeping, and they are taught those subjects.

5116. Then you teach domestic economy as well ?—Yes, to that extent.

5117. There is a female teacher for that, is there ?—Yes, but we will not take a student for domestic economy only: that is not our purpose.

5118. Quite so, but as an additional branch, you do ?—Certainly.

5119. And cooking ?—Yes.

5120. There is a woman who teaches that ?—Yes; I have a good travelling staff for domestic subjects, and I work them at the school as well.

5121. The summer students are, therefore, a different class of student from the winter student ?—May I ask what is the exact differentiation to which you refer ?

5122. What I meant was that they come for shorter periods ?—Yes; of course, they are not of a different social class.

5123. No, I did not mean that; they are a different class of student in the respect I have mentioned ?—That is so.

5124. And mainly women in the summer ?—They are, practically, half and half, half boys and half girls that have passed through the school.

5125. You are not now referring to summer students only ?—No, to all the students.

5126. Perhaps you will just explain to us what is the travelling staff ?—Yes. To take butter making, we have a van fitted with the necessary apparatus which visits the various villages and teaches butter making—we confine our attention to butter making, cream cheese making, and a little poultry trussing, and at the end of each course there is an exhibition offered to the best student tenable at the Farm School, and the resident instructor at the Farm School is the examiner. We have a smiths' shop also that travels in the same way, and the instructor visits the Farm School periodically to give instruction in horse shoeing to the boys—or, rather, to show how a horse ought to be shod. Then there is the horticultural instructor who has the supervision of school gardens, who carries out horticultural lectures and is responsible for the acre and a half of gardens that we have at the present time at the Farm School. He takes the students who come for the horticultural work at the farm school. Then there is a domestic economy staff, one of them taking the girls in the summer time who want cooking instruction, and so forth. So that the whole of these are

worked in as part of our farm school staff, although they are not paid by the Farm School; they simply go in one day a week or one day a fortnight, as the case may be.

5127. Does the domestic economy staff travel too ?—Yes, we have the same staff doing the work in the elementary schools and the work in the secondary schools and the work at the Farm School, so that they are familiar with all three.

5128. Now with regard to the after history of the students, you told the Committee that you would give them some information ?—I do not appear to have my paper with me.

5129. Then, perhaps, you will send it in to the Committee ?—I had the whole of that tabulated, and I should have liked to submit it to you, but I do not appear to have it. I can, of course, send it in to you. *The Witness subsequently sent to the Secretary the statement referred to which shewed that :—*

The total number of students attending the school during the school years 1900-1907 was 268 of whom 143 were females and 125 males. The sources from which these students have been drawn may be divided as follows :—

Farmers or from farms	164
Farm Bailiffs	20
Dairymen	19
Gardeners	7
No farming connection	58

Total..... 268

Present or recent positions occupied by above students :—

Engaged on farms	104
Assistants in Estate Offices	4
Dairymaids and Dairying	89
Farming on own account	12
Small Holdings (Poultry)	2
Gardeners	5
Colonies	26
No definite record. Many of them women students who married later	26

Total..... 268

5130. Does the staff of the school give any advice to farmers. Do farmers come to you for the purpose of consultation ?—Yes. I will give you an example, but I should not like a note to be taken of what I say. *(The Witness gave the example.)*

5131. You have no dairy factory at the Farm School ?—No, and I do not think there is one in the county—I do not know of one.

5132. There is a proposal, at present on foot, to put up a dairy factory ?—Yes, that is what they are doing at Petersfield.

5133. The county is proposing to put up a dairy factory ?—No, by the farmers in the county.

5134. *(By Lord Moreton.)* It is a private speculation ?—Yes.

5135. A co-operative affair ?—Yes.

5136. They have consulted you as to that ?—As to the practical side of it.

5137. *(By the Chairman.)* What is the attitude of the farmers towards your school—is it satisfactory ?—The attitude of the farmers at first was rather antagonistic; they did not think that the school would fulfil all that we hoped, but we placed on the committee of the school a majority of farmers, consisting of some of the ablest men in the county, in whom the farmers had confidence, and, bit by bit, the objection has disappeared, and we have been invited by various farmers' clubs in the county to exhibit at their shows to show what we are doing at the school, at the Basingstoke Show, for instance, and the Romsey Agricultural Society, and we have, I think, overcome that antagonism. Certain it is that they speak now with a great deal of respect about the work, and certain it is also that we are getting them to send their children to the school. I have here a table showing that we had 55 students last year attending, that is, during the winter and summer, and I should like, if I may, to just run down the occupations of the parents and you will see: farm bailiff, farmer, farm bailiff, farmer, farmer, farm bailiff, farmer, farmer, farm bailiff, land agent, schoolmaster, schoolmaster, farmer, merchant, farmer, farm bailiff, the next six are farmers, fruiterer, farmer, farmer, farmer, no parents, then four farmers, fruiterer, farmer, then ten farmers, gardener, planter, farmer, farmer, farm bailiff.

5138. *(By Lord Moreton.)* May I ask what a fruiterer is ?—He is a man who sells fruit in Basingstoke and runs

a market garden. I think that list is a sufficient answer on that point, because taking the whole, I do not think there are six who are not connected with farming or with the land in some way or other.

5139. (*By the Chairman.*) That includes the winter as well as the summer students?—It includes both winter and summer students.

5140. (*By Mr. Latham.*) I should like you to go much more fully into your work at Basingstoke at the show?—We have been trying to get the farmers interested by presenting them every year, in some part of the county, with the result of the whole of our work in the form of an exhibit. We send the wheat and oats and the roots and whatever we can according to the period and place them before them, and we arrange an exhibit on the educational side as well. We present the whole of our work; cheese is made, chiefly Stilton, and butter is made, and we send the wheat and oats and the roots, and we say, "That is our product," and while the show is going on we have our staff from the school, with the students, to explain things in connection with the exhibits and to give illustrations and little lectures of, perhaps, 10 minutes each. I think, probably, you have seen our exhibit at the Basingstoke Show.

5141. Yes, and I have taken great interest in it?—It has proved very successful; the rooms are simply crowded, sometimes you cannot get through them. That was the suggestion of the farmers on the Committee; it is entirely their doing.

5142. (*By the Chairman.*) To show by these various exhibits what are the results of the teaching in the school?—That is exactly it. I do not think you can show a farmer better than by saying, "There is the grain we grow under conditions which, of course, are school conditions," and, of course, we send it in sufficient bulk to make it something more than a mere little toy exhibition.

5143. That is accompanied by explanations given by the staff of the school?—Yes.

5144. (*By Lord Moreton.*) I think you said your farm was 71 acres?—Yes.

5145. I see as a matter of fact—I do not know whether you have noticed it—that in this report it is put down as 61 acres?—It ought to be 71.

5146. Can you give us a rough idea of the stock on your farm?—Yes. We have two horses, 10 cows, I think we have about four heifers, a certain number of pigs and about 100 head of poultry.

5147. Any sheep?—No; that is the one thing where I am afraid you have touched our weakness. We ought to run a small dry flock.

5148. Hampshire is essentially a sheep county?—Yes; but you see we are on the clay where we are, and the place is small.

5149. I suppose if money was no object you would feel you could not do better work than by enlarging your boundaries and having a breeding flock?—I should like very much to have a dry flock at any rate. Like a very distinguished man, I am not an agricultural labourer and I am not in a position to pass any opinion on that subject, but if I had my own way I should have the farm 150 acres, and I should certainly have a small flock.

5150. Your school being of course caterers for the county of Hampshire, do you think that the Hampshire farmer's son is getting the best education he can to farm in that locality without any technical training in the management of sheep?—I confess that is a weakness.

5151. Yes, it seems to me that that is the very weak point in the whole establishment?—I may say that it has been discussed, and last year we went the length of serving notice under our lease. I think, however, considering the fact that we were in the melting pot with regard to higher education as a whole, and that that brings up a good deal of opposition, we might have had the whole of the original fight to face again: with extra expenditure, the Committee thought we had better go on in the way we were.

5152. You teach, I suppose, elementary veterinary science?—That is done by the head-master, but we have an occasional visit from a veterinary surgeon. We have a man semi-officially attached to the school.

5153. I take it you teach what we might call first aid?—Yes, exactly.

5154. How far do you take your pupils in chemistry?—A quite elementary course, rather with the view of getting them to look upon chemistry as something that can be helpful to them, and can present to them a means of getting

at and understanding what they are going to use, and that analysis of cake and of manure are of value, but not that they can actually do it themselves.

5155. That is what I want to come to. Do they learn enough in your opinion so that in after life when they send for instance a sample of cake up for analysis and receive the analysis back that they will be able to see it is deficient in certain qualities, and to understand what the analysis means?—That is exactly our point. We want them to understand what is meant when they get an analysis.

5156. With regard to book-keeping, the book-keeping you teach, I take it from what you say, is entirely of an agricultural type?—Yes.

5157. Not of a general commercial type?—No—simply in connection with farming.

5158. Are the books audited?—Yes, monthly from the office, and then they are audited by the Local Government Board auditor—whatever book is brought into the audit is audited by the Local Government Board auditor.

5159. Are all the pupils who come to you in receipt of scholarships—I think you mentioned something besides scholarships—are all your students in receipt of public money, or do some of them who come to you pay for their own keep entirely?—It is almost half-and-half.

5160. I rather understood you to say that all the pupils were in receipt of public money?—No; there have been 135 paying students to 133 scholarship students during the time we have been at work.

5161. I understood you to say that some of your agricultural students go on to Reading, but that your dairying and horticultural students do not do so?—That is so.

5162. Is that because the county of Hampshire does not afford facilities for the purpose, or is it because there is no inclination on the part of those students to go on?—I think it is largely the choice of the students. You see the horticultural students are usually small people.

5163. Let us eliminate them from the question then and confine it to the dairy students. The dairy students do not go up to Reading in the same numbers as the agricultural ones do, I understand?—No; we have had very few; I do not think we have had two in three years. You see the work that we do at our dairy school—and I think Reading would probably express the same view—is such that so far as butter making is concerned they get all they want from us.

5164. That is just the point I wanted to come to. I may take it then that the pupils who have been through your dairy course consider that they have learnt sufficient of the science of butter making to carry them through all the work that they would be required to do in the county of Hampshire?—Quite so. The dairy work is very well done at our school, and complete in itself.

5165. (*By Mr. Latham.*) What lectures have you given in the county?—Chiefly horticultural. We have done a great deal in veterinary lecturing, but we stopped that last year for want of money. We had veterinary lectures on the care of animals and farm hygiene every winter up to last winter, when our funds ran down. Our "whisky money" used to be about £11,000, but it is only £8,000 now, and that has very much hampered our work. May I just say one other word about the Farm School with regard to a feature that was introduced two years ago, and which I find is very much appreciated. We get an engineer to come in every week during the winter to teach the boys to take the machinery apart and put it together, to take out a damaged part, and do it in the field, and put it back again. It is all done practically. The instructor does it first—it may be a binder, or whatever it is; we have more machines than are used on the farm—and the boys help afterwards. They start and take it apart and take the damaged part out for repair and put it back again. I am informed that that work is very much appreciated; the farmers tell me that it is of value.

5166. How far do those lectures extend. You have given us veterinary?—Horticulture.

5167. No agriculture?—In agriculture we have done no travelling work. We carried on certain manurial stations in the county for a certain number of years and then they fell out, I believe largely for financial reasons, I think I may safely say that. We had one at Lymington, one at Fareham, and one at Botley, but those have dropped out within the last three years or so.

5168. If you had more funds would it be profitable to the district to get these lectures extended?—I think on the whole it would, but there is a considerable difference

Mr. D. T.
Cowan
30 May, 1907

Mr. D. T.
Cowan.
30 May, 1907

of opinion as to the value of these demonstration stations and a number of my Committee consider it is better to confine the work and have it directly under the control of the head master at the school.

5169. I know there is such a very great difference in the soils in Hampshire that it would be bringing it into a very small sphere to have it only under the control of the school?—That is my own private opinion—that we ought to have continued the work, but it is largely a question of funds with us. Hampshire has a large amount of forest land: in the New Forest alone there are 96,000 acres of forest, and the county does not get a very large grant, and when you come to £8,000 “whisky money” to spread over the whole of our higher education, it leaves very little, and I am afraid it is largely a question of funds.

5170. If you had more funds, you have ample scope in which to spend them?—Undoubtedly.

5171. I presume the travelling farriery school, which I know something about, you consider is quite sufficient for the smiths?—Yes.

5172. Do you have any veterinary surgeon attached to the school?—Yes, we have a veterinary surgeon attached to the school who pays periodical visits and gives instruction, and we have also systematised the examinations—for instance any holder of our certificate on presenting it to the Farriers' Company would get registration without going through any other exam.

5173. Does the instructor give lectures on the structure and formation of the horse's feet?—Yes, the instructor himself does that.

5174. Where does the higher education, the scientific instruction, come from—yours is all practical?—We confine it entirely to the evening schools, linking those up with the Farm School, and then linking the Farm School up with Reading College.

5175. You do not have anyone down from Reading College to give scientific instruction at Basing?—No, it is done by our own staff.

5176. Which of your staff does that?—Mr. Newsham, the headmaster, and Mr. Yates, whom I dare say you saw in charge of the Nature Study Exhibition at the Royal Counties Show. Mr. Yates is a Reading College student and a farmer's son.

5177. Does Mr. Newsham hold any degree?—No: he is chiefly practical, and a thoroughly good man for the position.

5178. Is he sufficiently instructed to give this scientific education?—Yes, up to the point where we think we can best fill the place.

5179. Does he do the analytical work?—We do not do analytical work in the sense probably in which you are applying it. We simply are trying to instruct the students to have a sufficient knowledge of elementary science in order to enable them to understand what lies beyond.

5180. You cannot get your soils analysed then?—No, we do not make any attempt at that. We give some idea of what one would call the physical side of soils, and show how they may be roughly differentiated, but we make no attempt at analysing soils, and simply try to get the student to understand sufficiently so that he may bring trained intelligence to bear when he comes to deal with analyses of soils.

5181. There is nowhere in Hampshire where that could be done?—That is so, except it is at the Hartley University College, where there is a very able chemist, Professor Boyd, who could do that as well as any other, but not otherwise.

5182. Where do your students come from? Do they confine them to the country?—They are chiefly confined to the country, but not altogether. I have brought up a list of our last year's students tabulated with their addresses, and I should say 90 per cent. are county students.

5183. I suppose county students take precedence over those from other counties?—No. If a student from another county cares to enter, we would certainly accept him. Of course, we would like to meet the needs of our own county first, but there is no rule about it. If any Berkshire or Oxford student were entered, we should not turn him out to make way for a Hampshire student, although we prefer our men to come first.

5184. You run the dairy school all the year?—Yes, the travelling dairy school and dairy at the Farm School all the year.

5185. You said you made butter in the winter as well as in the summer?—We make butter all the year round,

but not hard cheese the whole of the year because we have no artificial heat.

5186. Was that your dairy instructress that I saw yesterday, Miss Darrell?—Yes, she is the head of the travelling school. She used to be examiner for degree work at Aberystwyth, I believe; she is very highly qualified, and I think the staff are generally.

5187. You spoke of the show at Basingstoke, in which I take a great interest when I go there. You show Stilton cheeses and different things at that show?—Yes.

5188. The whole work of your little institution is brought there to show to the general farmers exactly what has gone on during the whole of the year at your school?—Precisely.

5189. It is taken very great interest in?—Yes.

5190. And I may say that very possibly your cheeses are valued?—I only know we could sell three or four times the amount we make, and, if I tell you I one year sent our cheese down to Brighton and got 9½d. in the open market for our Cheddar, you will probably admit that is a good price.

5191. I do not know whether you are diffident in saying much about your work or not, but I think the school is of a higher value than you are willing to give your opinion about?—I suppose one does not care to make too much of one's own child in public. Nevertheless, I am very proud of the school.

5192. May I put it in this way, that you do a very valuable work and that you cannot do more than you are doing without more funds?—We are very much hampered for want of funds.

5193. That is what I wanted to know.—I did not think it would be right of me to make too much of my school, although I am immensely proud of it, and lead people to suppose that it was a great institution with great buildings and a great staff when it is nothing of the kind.

5194. If you had more money could not you make it a great institution?—If we had; but at present we are very much hampered for want of accommodation. We want more accommodation for our students, and we would like a larger farm for instance. If we could get help for that I am perfectly sure we would get a farm in a situation in Hampshire where we could get typical soil. That has always been the question that has been foremost when the matter has been discussed, but that means more money, and we cannot do it. We have had a great fight in the county to get any rate aid at all, and it was only passed last Monday for the first time. That has always been our one great difficulty, but I do say, if that is the point you want me to mention, that I consider we are doing very very valuable work there, and I am of opinion that we could do more valuable work if we had the funds, but we are hampered for the want of funds.

5195. You do not give scholarships from the farm school to Reading College?—Yes, we do; but we will not give a scholarship to Reading except through the Farm School.

5196. You made a remark just now as to passing them on to Reading. Would that be by means of scholarships?—Yes. At the end of six months Professor Percival comes down and tests the boys out in the fields in everything, even to putting the horses to the plough and taking them away again, and all that practical kind of work. They have to do everything, feeding the animals, and so forth. The boys do all that: they have to do milking in the cow sheds, and then there is a paper examination on the science work, botany, chemistry, physics and so forth. As a result of that we pick out the two best and send them to Reading the next winter. There again, we have not money to send more.

5197. (By Lord Moreton.) They would go to the short course there?—They would go to the farmer's course at Reading.

5198. (By Mr. Latham.) This practical school of yours is thought to be the best feeder for the scientific teaching afterwards?—I think so.

5199. And that only those who are proficient in the practical side get the chance of going to Reading?—That is so.

5200. The county do give other scholarships, but not agricultural scholarships?—Yes, we have a scholarship system for sending boys and girls from our secondary schools to Reading College, and we gave Reading College £1,000 to found those. In the year 1897 we gave Reading

College £1,000 to help the building on consideration that we could send three scholars every year from our secondary schools, but not for agriculture.

5201. I understand that the scholarships in agriculture mean that the student must go through Basing first?—He must go through Basing first, in fact, the agriculturist would not have a ghost of a chance for the others, because the standard of examination is so high. If a boy was able to take one of our senior scholarships straight away, he, probably, would not think of taking to farming, and we do not want that; we want the man who will take off his coat and work after he has been through our school, and we have, actually, the type of boy who does go back and labour and helps his father if he is a small holder, say, of 50 acres; he goes back and is a boy who has to be up in the early morning and work late, and so forth. We have that type of boy. I have not the figures, but I may say this, that taking the 268 students who have passed through the school up to last October, quite 90 per cent. of the ones that I have traced have gone back to work on the land.

5202. You keep yourself in touch with them?—Yes. I introduced a system when we started our scholarship system, when I first went as Director of Technical Education—I was first appointed in Hampshire as Director of Technical Education—and I tried to get a record of students who had gained scholarships and who had been helped in any way. It is very difficult to follow those, as you know.

5203. Yes.—But I have traced all through the Farm School except 50, and of those only four have become assistants to land agents; the others have gone back to the land.

5204. I was going to ask you if you could give us what proportion of those students had become land agents and valuers?—I can give you that figure right off—four.

5205. Can you give us the same figure with regard to the farriery school?—We happen to have a most fortunate man, the son of a fairly large farmer in Hertfordshire, in charge of that.

5206. What is his name?—Powis, a most excellent man—you have, probably, met him at the Show, and he has captured all the smiths. Since his coming we have not been able to take all the students who apply to come to the school, and about 18 months ago I suggested to the Committee that we might, for the first time, introduce a fee for the 10 lessons of half a crown. We did that, but it has made not the slightest difference. We got as many students as ever.

5207. (By Lord Moreton.) Those students, I take it, are men in the profession?—Yes, apprentices, doormen, smiths and master smiths. We have never a vacant place in school. There again, we have never got any grants until last year, when, I think, we got a grant from the Board of Education. We are in this very curious position, that in our attempts to get a little aid, we have part of our work under the Board of Education, and part under the Board of Agriculture, which makes matters a little difficult, having a dual central body of control. That is merely in passing, however, but it exists. I was told by a very prominent farmer in the Meon Valley, with regard to that school, this; he said—"I consider that your school has saved us hundreds of pounds by showing the smiths that by good shoeing you prolong the life of the farm horse."

5208. (By Mr. Latham.) You have not given us anything like the numbers, and if you could it would be very valuable, of those who have passed through the farriery school?—I should imagine, roughly speaking, about 600.

5209. Now with regard to the dairy students, can you give us a rough idea as to what number of dairy students you have?—We run about 16 classes of 10 days in the year, and it averages out at 8-9, I think, per class—call it 9, that is summer and winter.

5210. That is about 150 a year?—Yes.

5211. For about how many years have you run that?—We started in 1894.

5212. Taking your county, generally, has the improvement in butter been very considerable since the classes have been working?—I think so. I can only say that I have a letter from a man who deals in butter at Southampton who stated that in his opinion—he is not a farmer at all—the butter had very much improved in the district since we took to this work.

5213. Do you have examinations of the smiths, and do they compete for prizes periodically?—Not prizes, but certificates. The examinations are held periodically; it depends upon the number who can come, but if the number would justify the expense, we hold an examination, and we

inform the Farriers' Company, and by an arrangement with them our certificates are accepted as qualifying for their registration.

5214. I scarcely like to ask this question of you, but do you ever invite the Farriers' Company down to see what good you are doing to farriers?—We have always invited them down to our examinations.

5215. Do you ever ask any member of the Board of Agriculture to come down to your farriery examination to see the exceedingly good work you are doing?—No, but Mr. Brooke-Hunt has a general inspectorial right, if he likes to exercise it. We welcome him on all occasions.

5216. But I am afraid he would not know when these things happen if you do not send him an invitation?—He is down there constantly. We keep him in touch with our work, although we get no grant for it, and, periodically, I go about with him in the county.

5217. There is no work in the country more valuable than that?—Undoubtedly, it is one of the best things that we put our hands to.

5218. And no one values it more than the farmers, and the merchants, and the dealers in horses?—Quite so.

5219. (By Dr. Somerville.) Do I understand that a considerable proportion of the 600 pupils that have gone through the farriery school have become registered as blacksmiths or shoeing-smiths?—I should imagine quite one-third of them, probably half; it would be difficult for me to get statistics as to that, but I could get them.

5220. A large proportion then are registered?—A very large proportion.

5221. I suppose the man either proceeds to secure a shoeing forge for himself, or goes as an assistant to a man that has one?—Yes; they are very keen on registration.

5222. I suppose a man that holds a farrier's certificate is under no obligation to practice the profession?—No, but we will not take him into our school unless he is practising.

5223. That is the point then—you do not take in young farmers?—No; we teach young farmers at our school.

5224. You will not give a young farmer the opportunity of acquiring the art of shoeing?—Not at our travelling school.

5225. (By Mr. Medd.) In answer to Lord Reay, I think that you said the buildings only cost the county £100?—Our class-room building?

5226. Yes.—Yes. It is simply a corrugated iron room, without brick foundation but lined with match boarding.

5227. What has been the total capital expenditure by the county?—Do you mean stocking the farm as well?

5228. Yes—all that you put down to capital expenditure?—The dairy cost £350, the class-room we put at £100, that is £450, and I should imagine that we stocked about £9 an acre, off-hand; I could not give you the exact figure.

5229. For 71 acres, that would be £639?—Yes, I imagine it would be about that—certainly, we did not run into £10 an acre for stocking.

5230. Do you rent the land?—Yes.

5231. What length of lease have you?—We had a lease for seven years, renewable for another seven, but we are now simply going on from year to year by reason of the fact that we hope to get on to a more reasonable farm.

5232. What rent do you pay?—£75.

5233. With regard to the income, I think you told Lord Reay that the fees and the sale of produce amounted to £850?—Yes.

5234. The net cost to the county is £650?—Yes.

5235. The Government grant is £100?—Yes.

5236. That is £1,600, altogether?—That is so.

5237. In the Government Report it gives a total expenditure of £2,920, so that there is a balance of £1,320?—Yes, but that is the whole of our agricultural work; the farriery school, the travelling dairy school, horticulture, and so on.

5238. You put down £1,600 as the actual cost of the Basing school. £1,320 is the total agricultural expenditure?—That is so.

5239. What is this Board of Education grant exactly?—The Board of Education grant has not been with us long enough to enable me to pass any judgment about it, because it is given on per student per class and it is rather difficult to estimate, and sometimes we get £2, and sometimes we get £3, according to the particular subject of

Mr. D. T.
Cowan.

30 May, 1907

Mr. D. T.
Cowan.

30 May, 1907

instruction and at what the class is valued. We do not get a lump grant at all.

5240. You are not getting it as a block grant under Clause 34 of the Regulations for Technical Schools?—No: we are negotiating now with the Board for the block grant for the county.

5241. What, roughly, is the amount which comes to you from the Board of Education which goes into your agricultural expenditure?—I have not the exact figures in my head; it is a very small sum, but I could give you the one and only grant we have got in connection with our Farm School. That was £63, quite unexpectedly.

5242. What was that given for?—For our horticultural work and dairy work.

5243. As a kind of technical day school?—I am afraid it was not very definite.

5244. It would come under a technical day school and it would have come as that.—I think it must have been.

5245. I may take it that all counties under present circumstances could not afford to start a similar institution to yours?—I do not think each county would find it profitable to have a similar institution.

5246. Even if it had the money?—I think not.

5247. Are the counties affiliated to Reading in any way associated with you—Dorset, Oxford, Bucks, and Berks?—No, we have had, I think, one or two students from Dorset, and I think we have had two from Sussex, but there is no affiliation, and there is no organic connection.

5248. If there were a system of organised agricultural education for that area, possibly your school might be taken as the intermediate school for the area, just as Reading is the advanced college for the area?—We could do it quite thoroughly, with the exception of the sleeping accommodation.

5249. You could do it?—We could do it.

5250. What is the present accommodation?—We have sleeping accommodation for 16, but we can put them up in cottages. Sometimes we put up about 30 at a pinch.

5251. Is there any way of extending the buildings where you are now. You suggest removing elsewhere. Would it be better to move elsewhere?—I certainly think myself that a typical Hampshire farm for educational purposes would be better.

5252. Have you any particular locality in mind?—Yes, I would prefer to be nearer Winchester, which is absolutely the centre of the county, and where there is typical soil.

5253. If you moved and extended your area and cultivation and buildings, you would have no objection to act as the intermediate school for this area, I suppose?—I can only say that I think my Committee would agree with that, but I cannot pledge them.

5254. Of course your Education Committee in my scheme would retain the absolute control and management of the school.—Yes.

5255. With regard to the instruction, I notice that you go periodically to the Basingstoke market. Do you have the Board of Agriculture market records?—I think we get every publication of the Board.

5256. You do not know whether the students are regularly supplied with the market records?—I do not think so, but there are visits to the Basingstoke market every week. Some of our students go into Basingstoke under one of the teachers every week.

5257. Do you know whether stock is sold by live weight at Basingstoke?—I do not think I can answer that.

5258. With regard to the instruction in machinery, have you any difficulty in getting machines?—I do not think so. Messrs. Wallis and Stevens, who supply their man to us, are quite sympathetic with our objects, and as a matter of fact they have fallen in with a scheme not connected with the Farm School, but another scheme, by which they give an additional award to their apprentices who attend their engineering course at Basingstoke, and it is their man who comes out to us, and he is very systematic with the work.

5259. Do you get the machines brought to the school, or do you have to go to the farms and use them there?—We try to get them to the schools as much as possible, because we want them on the spot.

5260. Do you combine simple mechanics with the instruction in machinery?—Very simple. I do not think

our headmaster is very strong on that point, but there is some.

5261. It would be advisable to combine some elementary mechanics?—It certainly would make the work more solid. You see that again probably means another teacher, and you cannot introduce another teacher without having sufficient funds.

5262. With regard to the winter courses for the men what is the average age at which they attend?—We do not want them under 15, if possible. I should say the average age is about 18; we get them from 15 up to 20.

5263. Are there any bursaries available which would compensate them in any way for the loss of wages if they are sons of poor parents?—No, only in this way, that six of the winter students get bursaries or scholarships.

5264. That would merely cover the cost of maintenance?—Yes. As a matter of fact, as I was pointing out to the Chairman, the important work that I see we are doing is in getting the farmers to send their sons to us when they are sacrificing wages.

5265. That is very valuable, but there may be competent and good lads whose parents cannot really afford the loss of the wages the boys are earning. I was merely asking whether there are any bursaries available which would compensate them for that loss?—No.

5266. With regard to the training of teachers, do you do anything in Hampshire now?—We have not for two years, but we had several courses—we had 30 teachers for three years running.

5267. Might you not use Basing to some extent for that purpose?—Very much; I think it is very necessary work.

5268. You might either have a short course, or you might have Saturday courses throughout the year there, might you not?—I do not think we could run a Saturday course as well. The staff are very hard worked; they have to be up at six in the morning on the farm, the head master as well, and they must have some leisure, and we really could not run a Saturday afternoon course without infringing very much upon their leisure time.

5269. With regard to the school gardens, are they under your supervision?—Yes, the whole of them.

5270. You have a very considerable number, especially in the Isle of Wight, have not you?—I am not Director for the Isle of Wight. The Isle of Wight was separated from our county for educational purposes by a special Act, 15 years ago.

5271. With regard to the continuation schools, what horticultural or agricultural instruction do you give in those?—We are giving the whole of our horticultural work with our evening classes now, and it will be more so in the future.

5272. What will the horticultural instruction comprise?—It comprises lectures by our own man—four lectures, and includes, whenever we can get it started, a school garden under supervision, and in the evening school proper it will comprise certain affiliated subjects.

5273. In some of your evening schools you have been teaching what one may call minor rural industries, such as basket-making, have you not?—Yes.

5274. They have been very successful, have they not?—They have been very successful up to a point, but the strawberry and fruit industry has been growing so that we have not latterly had the cottagers making any baskets, but there is another movement this year again, and next year we shall be active, I think. But we have been very successful with that.

5275. I thought so, especially in the neighbourhood of Southampton, the strawberry-growing district, where there is one school in particular—I forget the name of it?—Yes, that is at Sarisbury.

5276. You mentioned a scheme for higher education. Is that still under consideration or has it been adopted?—It has been adopted.

5277. Can you give us some indication of the nature of the scheme that you have adopted?—In the first place we should have the chain quite complete between the elementary school and the Farm School up to Reading by means of linking the elementary school with the evening school, the evening school through the horticultural work and butter-making with the Farm School, and exhibitions from the Farm School to Reading. It has been a little bit haphazard up to now; but last Monday the Council passed the scheme and it will be a permanent machine for carrying on the work in that organised way.

5278. That is exactly the scheme one would wish to see introduced in each county, which would link up the elementary and the continuation, through the farm school, up to the advanced centre?—There is an important thing in connection with that that I should like to mention. Our agricultural scholarships are organised through the head masters of the elementary schools and the farmers' clubs. We ask the head masters of all the elementary schools to place a sufficient number of hand bills, bearing on the exhibitions, into the hands of pupils who have just left and who are connected with the evening schools, so that we make use of the schools and the farmers' clubs in that way. We send a sufficient number of hand bills to every school and farmers' club in the county for distribution.

5279. (*By the Chairman.*) In what respect would you expand your school supposing you had sufficient funds? What further development would you give to the school?—In the direction first of getting a larger and more suitable place and simply developing our present method. I do not think I would alter the method, because I think it meets the needs of the county.

5280. Would you increase the staff in any way?—Yes; for instance I should like to see the science side a little stronger than it is. That is not so strong as I could wish it. I should like to see that better.

5281. You wish the practical character of the school to be maintained?—Yes, quite. I think for what we have set ourselves out to do it is the most important thing there to have that practical work thoroughly done, thoroughly understood and scientifically explained.

5282. Whatever deficiencies exist in the scientific training of those students who leave your school and go to Reading, those deficiencies are then made up at Reading?—That is so.

5283. Your view is that the number of schools of the type of your school should be increased throughout the country?—Yes, I do not pretend to know sufficient about

other counties, but I only know that this type of school has met the wants of the county.

5284. Your view is that a school like yours is most likely to attract the sons of farmers?—I believe so. 30 May, 1907

5285. And to meet the wants of farmers?—Yes.

5286. The popularity of your school is on the increase?—Distinctly so. We started with 16 students, and we last year had 55, and it has been a gradual growth each year, 16, 31, 40, up to 55.

5287. You do not deal with forestry at all?—No, but we want to deal with forestry, or rather I would call it sylviculture. There was a small part of the farm set aside for planting, but the uncertainty of our tenure, not knowing whether we should come to an end for want of funds or go to another place, prevented the Committee from developing it, but there have been two reports on the subject.

5288. Your intention in the future is to teach it?—We want to teach sylviculture.

5289. Do you cultivate any fruit trees on your farm?—Yes, we have about half an acre of fruit trees. They are few in number, but they are very well selected, and selected for a particular purpose—that is, the certain types of fruit that we want to grow.

5290. You carry out spraying and the other processes, of course?—Yes, but that is small again because the whole place is small, but it is nevertheless thoroughly done.

5291. In the county your travelling horticulture instructors are probably consulted?—In that way not so much as one would like because that is only beginning to develop in the county.

5292. You consider in the future that probably that will be developed?—Yes.

5293. (*By Mr. Latham.*) Your apples and different things are part and parcel of your display at Basingstoke?—Yes, I think they are quite perfect of their kind.

Miss FAIRFULL called and examined.

5294. (*By the Chairman.*) You are the Warden of the Studley Horticultural College in Warwickshire?—I am.

5295. Will you give the Committee some evidence as to the formation and as to the objects of the college?—The college was first started as a hostel in one small house in Reading in the year 1898. It was started by Lady Warwick, who was very anxious to make girls take up agricultural and horticultural work. They had 12 students to begin with, and they took different small houses near to the original house and the girls worked at Reading College—attended lectures there. In the year 1903 they thought that they had better get one place that would hold all the students. I think at that time they had got from 20 to 30 students—it was before I came to Studley—and they then took this big place of 340 acres at Studley, which is 15 miles from Birmingham. The place is a very wooded place with lovely trees, and altogether there are

5295a 340 acres with 25 acres of pleasure grounds. Then we have a farm which is let off to a tenant, but the farmer allows our students to go up and walk round with him and learn from him about the ground, and he also allows them to go up and learn how to milk cows and the looking after of cows generally. That part I do not think is quite satisfactory as it is, and we very badly want to have our own farm buildings; it would be more satisfactory if the students had the management of the whole farm, but from lack of funds we have not been able to do that. We have had to have the farm separate and the students are allowed to go up and work there. The horticultural branch is the chief branch. Out of the 39 students that I have this term, 30 of them take up horticulture, the remaining ones are working in the poultry and in the dairy. The horticulture branch is undertaken by Mr. Iggulden, who lives in Somerset, and who lectured to them at Reading. He comes up for three days every week and lectures to our students, and we have a head gardener and a head lady gardener who superintend the work of the students.

5296. I presume the students do practical work in the garden?—Yes, they do practical work. In the summer they even get up at half past four to do grape thinning and they work on till 12, when they rest: but they are always out in the summer by half past six, and in the

winter they get out at nine, directly after breakfast, and they work on till five.

5297. The horticultural students go through a different course from the dairy students?—They go through quite a separate course, but it is very seldom that a student will come wanting to do dairy and horticulture. Occasionally they ask if they may take up the poultry, but I do not advocate that at all because the time is so limited as it is. Two or three years is barely enough for them to learn all the gardening that we have got to teach them, and so we recommend them to take up only the one subject.

5298. The full course takes two years?—Two years, but a great many of our students stay on for three, and this year I have got some who are staying on for their fourth year; they are in their fourth year now; they leave in September.

5299. The working year is of 40 weeks duration?—Yes; some years it is only 39, but many of our students, for the sake of getting further experience, like to stay on in the holidays, and they work all through the holidays. We get a great number who are willing to stay on for the greater experience and work.

5300. At the end of the two years' course, you give a certificate?—Yes, to those who get a certain percentage of marks.

5301. To those who pass a final examination?—Yes.

5302. Have you any outside examiner for that final examination?—Yes, all except our book-keeping lecturer. He gives his own papers, but otherwise they are by outside people.

5303. What does the staff of the college consist of besides yourself?—The lecturer from Frome, in Somerset, on horticulture, Mr. Iggulden; Mr. Grove, who is one of the lecturers at Birmingham University, on botany and chemistry; Mr. Long, who takes book-keeping, as we find that a very necessary subject for all those who are going to start their own market gardens, and then we have one of the ladies in the college, who very often has been through her course, as a lecturer on entomology, and, if she is good enough, we make her under for the first year, and then we make her the head of the garden.

Mr. D. T. Cowan.

30 May, 1907

Miss Fairfull.

Miss
Faithfull.
30 May, 1907

5304. That is one of your students you are referring to ?—Yes, one of our best students will work under the head man gardener that we always have.

5305. As a kind of monitor ?—Yes, and then we have Mr. Herod, who is the bee expert, to come and lecture on bees, and Mr. Palmer, who comes to take the poultry work every week.

5306. Then you have, beside, a short course of instruction lasting from six to ten weeks ; that is for another class of students ?—Yes, it is for those who do not want to take it up as a profession afterwards. I do not think, myself, that it is a very good plan having the short course, except that we very often get long course students from those who come to us for the short course ; they come, and they stay on.

5307. It is a good means of recruiting for the longer course ?—Yes, but it is not very satisfactory, as the long course students rather object to a short course student coming and getting the pick of the work. The short course students do not have the unpleasant work of wheeling barrows and the rolling of lawns, and so on.

5308. You dispense with that ?—Yes, because they have not time to do that work.

5309. They only get theoretical instruction and the lectures ?—Yes, and they also do the practical, the nicest part of the practical, the pruning, the thinning of grapes, and things like that.

5310. You have no entrance examination ?—No.

5311. How do you find your students are prepared when they come to you ?—There are very few who have any knowledge of it at all when they come to us.

5312. I mean with regard to their general education ?—As a rule, it is very good. Sometimes we get our students too young, really. I do not like them coming before they are 18 or 19. If they come before that it generally means they have not been strong enough for regular school work, and that they have come to take up gardening on account of health.

5313. Some of them have been at girls secondary schools ? Usually, I think, the greater proportion of our students have had private school teaching, or high school teaching.

5314. You also give instruction in fruit bottling and preserving ?—Yes, we have a large marketing department. The students have to learn a little bit of everything ; they have to learn how to grow every fruit we can possibly show them, and how to grow every flower. We should not know what to do with the flowers that we grow unless we had a marketing department, so that everything that is grown goes down to the marketing department to be sold. We also make jam, and we bottle fruit, so that they may learn that part of the work.

5315. Are they taught cooking ?—Yes ; I teach the cooking. I have only just started that—about a year. We find that they like that very much, and it is very useful to them, because I used to have so many complaints that the students took posts as gardeners and had their cottages given to them, and then they were at a loss to know how to manage for their housekeeping and their cooking, and so on, and they did not know how to teach any maid that they might have, or any friend to help them.

5316. Has the college any grants from the Board of Agriculture or from the County Council ?—No, none whatever, except that we did get £19 for a nature-study course that we had before I went to Studley ; I think it was in the summer of 1905 that we got that.

5317. A grant from a county council ?—Yes, for this particular nature-study course that was held in the summer holidays, but otherwise we have had nothing at all.

5318. How are the finances managed ; who is responsible for them ?—Lady Warwick is responsible for any deficiencies that there are.

5319. Practically, you may say, it is Lady Warwick's college ?—Yes.

5320. The students, I see, pay fees ranging from £80 to £120 ?—Yes, that is regulated by the size of their rooms ; some of them have cubicles, and some study-bedrooms.

5321. They are all boarders ; there are no outside students ?—We have one or two. We have one at a farm who comes and does the work, but I do not care for them so much, as I prefer to have them all in the college, if possible.

5322. There are bursary students ?—Yes, at this moment we have eight or ten bursary students.

5323. Who gives those bursaries ?—The Committee. Every term I submit the ones whom, I think, are most in need of it.

5324. You expect the full number for which there is accommodation, 51, will soon be reached ?—Yes. We are now 39, and I still have a great many applications.

5325. Are there any classes for elementary teachers in the neighbourhood ?—No, we have not had that at all.

5326. The staff of the college do not give any lectures in the county ?—A lady who is there under Mr. Herod helps with the bees and gives practical demonstrations, and there is another lady who gives entomological lectures. Whenever they can they take extra lectures, if they are good enough—the heads of the departments who have been students and who have worked up, but there are always the outside men lecturers.

5327. They are invited to give lectures outside ?—No, the men lecturers are invited to come in every week, and the ladies who are capable of lecturing lecture as well in the college.

5328. I see you have given us a classification of those who attended the nature study course ?—Yes, that was for one year. In that statement I have not made any mention of what our students have done since they left us. I can give you one or two particulars of those, if you would like them.

5329. By all means ?—There are about 50 who have done really well since they left. Miss Crooke has been before you ; she was one of our students. Miss La Mothe took up dairy work and poultry and bees, and has been doing very good work. Miss Hoare (now Mrs. Benson) was a very good student, and she has been appointed Assistant-Instructress at the British Dairy Institute at Reading. The Misses Murray are farming in South Africa and doing well ; Miss Dawson is working her own garden ; Miss Wheeler, who has her own market gardens and students, is doing well ; Miss Millard, her own garden and bees ; Miss Batchelor, who has gone to Canada is doing very good dairy work ; Miss Yates, who was a student at Reading is now a poultry manager in Canada, and was also manager of the Utility Poultry Laying Competition that we had at Studley—they have it every year in different places, and she was appointed as manager. Then there are the Misses Bidwell, who have a garden of their own ; Miss Grundy, who keeps poultry of her own and does a good trade ; Miss Hibbert, a jobbing gardener ; the Misses Hughes, Jones and Peers, who have a market garden and students and a jam factory quite close to Newbury ; Miss Mirrell, assistant in the dairy at Studley, who has gone to take up dairy work and who was a very good student ; Miss Swindale, who had been head gardener in a big house, I do not remember the name of the gentleman she was with, but she had five men working under her, and did satisfactory work ; she has just got a new post at Godalming ; the Misses Goddard, who went to South Africa ; the Misses Haig, who have got a splendid market garden at Maidenhead.

5330. Are the market gardens that are kept by the students you have mentioned paying ?—Yes, very well indeed. Then there is also Miss Tate, who is a gold medallist of the Royal Horticultural Society ; Miss Slack, who went to Sumatra and started dairying ; Miss Woolcombe, who is a gardener ; Miss Partington, who is doing her own dairy work ; Miss Colson, who is a County Council Lecturer ; I think she was doing that for two years, and I believe she was doing very satisfactory work. Then there is Miss Rix, who has been appointed bee expert to the Cumberland Bee-Keepers' Association. Those are a few of those who have done very well. Then there are a good many who go as under gardeners and as gardeners perhaps with one man or a boy under them.

5331. Are there any daughters of farmers amongst the girls at the college ?—I think we only have one at this moment.

5332. I see an application has been made to the Board of Education for the establishment of a scheme for the future regulation of the college ?—Yes, we wish to get the college on a more permanent basis, and we felt that it ought not to be in the hands of one person really, as it has been hitherto, and we wished to have it recognised if we could.

5333. The Board have consented to formulate a scheme as soon as arrangements have been made for the grant of a lease of the premises to a body of trustees in trust for the purpose of the college ?—Yes.

5334. A body of trustees has been appointed ?—Yes.

5335. The lease I see has been practically arranged ?—Yes.

5336. And will be executed shortly ?—Yes.

Miss
Faithfull.

30 May. 1907

5337. You would like the college to be entirely under its own management and have its own farm?—Yes, that is what we would like.

5338. Chiefly for dairying?—We have a dairy absolutely complete.

5339. The farm then would be for other purposes?—What we really want is the management of our own cows; that is the real point.

5340. It would be in connection with the dairy?—Yes.

5341. You do not want an arable farm, of course?—No.

5342. You wish to have the cows under your own control, and have your own milk instead of buying the milk as you do now? I suppose now you buy the milk from the farmer?—We buy the milk from our own farmer, yes. We are just going to put up a laundry now, as we have had several requests for the domestic economy branch entirely, not only the cooking part of it, but they want to learn housekeeping and account keeping and laundry work, I think chiefly to fit students for colonial life. They want to go in first of all for gardening and then to go on to the domestic economy branch, and my idea was that we should have our own laundry, and we are going to start that in September if we can.

5343. You would like to give the domestic economy branch the fullest development?—Yes.

5344. (*By Mr. Latham.*) If you have only one farmer's daughter at the college, from what class are your other students principally drawn?—Chiefly clergymen's daughters, doctors' daughters, and some daughters of wealthy people who want to manage their own gardens and their own farms. Occasionally we get Americans who come over to learn and who intend to go back to their own country. There were three girls who came over last year who had their own poultry farms out there, and they wanted to learn how to manage them for themselves.

5345. You spoke of your students' work on the farm. What manual labour do you expect these ladies to do on the farm?—We expect them to dig, we expect them certainly to attend to the cows, and do everything that is necessary.

5346. Milk the cows?—Certainly, they do that.

5347. Continuously?—Oh, yes. A new student who came this term has been up every day regularly to learn to milk.

5348. They do not take any regular service, do they—do they go twice a day, night and morning?—Yes, and they take posts afterwards in which they would have to do the work.

5349. What sort of wages do you find them capable of taking afterwards?—From £40 to £60 a year, not more.

5350. Can you give any illustration of any that are managing dairies like that and doing their own milking?—Yes, there is a Miss Batchelor, who has gone to Canada to a very good dairy; I have not got a note here of the wages she is getting. Then there is Miss Blenkinson, who had charge for many years of a large dairy.

5351. I am more concerned about this manual labour. The work is rather menial, is it not?—I do not think they find that. In gardening they do everything.

5352. I am referring to agriculture. I am an agriculturist myself, and my experience is that we cannot get women to milk, and you would be very valuable to us if you say you can even get ladies to milk?—Yes, I do not think they mind it at all—I must say I have not time to go up every day myself now, but I certainly learned it myself.

5353. What is your idea of this little model farm which you would like to have?—I think it is a mistake that the students should not see when the cow is ill and so on. At present they see the cows only when they milk them, and when they are walking round the farms with the farmers and when they are going to demonstrations at the various farms, and I want them to be able to do everything for themselves, to know how to look after a cow just as they would if they had their own horses. In that case they would superintend everything, and I think they ought to know everything about the cows.

5354. You are really anxious for them to do everything—to feed the cows, to milk them, to clean them out and do the various things that we find difficulty in even getting men to do?—Yes, just as with the poultry.

5355. But it is a much more derogatory work in the case of the bigger animals, in fact I scarcely think it is a woman's job at all. We will now go to horticulture. Does that include every branch?—Yes, every branch I think.

5356. They are taught grafting and pruning and digging and grading and packing?—Everything. The packing they need not take up unless they like—that comes into the marketing department, and they only go there if they wish to take up that branch.

5357. But packing, you know, is so very important. When Miss Crooke was before us she seemed inclined to evade that question. As you know, probably, we have our fruit very much worse packed than the foreigner packs them; for instance, you never see our apples packed like the foreign apples are packed when they come to England?—No, but the difficulty is that if we put students on to pack we probably should not get our orders done properly, but if they go into the marketing department for a regular course, as a great many of them do, then they watch the packers, and learn gradually how to do it themselves. If we were to put them on to pruning trees and that sort of thing they would probably spoil the trees, and it would be a little difficult if we were to put a class of say 30 on to packing peaches, for instance.

5358. I suppose you know peaches that are badly packed are almost unmarketable, just as butter which is badly packed is practically unmarketable?—Yes.

5359. I am disappointed that you and Miss Crooke do not place more value on the packing system?—I do think it is most important, but I think it is a branch that ought to come by itself, I mean by that for the students who are only going home to do private work it is hardly necessary for them to learn to pack fruit. Those who are going in for market gardens would naturally go through our packing department, and they would learn it.

5360. Yes, I see you have a marketing department. You made a remark just now that you had to dispose of your produce by sale. Let us go to plants and leave fruit alone. Do not flowers want careful packing?—Yes, very careful packing.

5361. Are they taught to pack flowers?—Yes, certainly.

5362. Then in that case it would be only introducing a little more finality if you were to teach them the fruit packing as well. I used to be much in Covent Garden many years ago, and the beautiful way that foreign fruit was packed there showed how far behind we were in our business, and I think if you are going in for finality, the careful teaching of the packing of every article, from the highest to the lowest, should be the first consideration?—Yes.

5363. Can you give us some information as to what you do in the way of preserving fruit?—We do a great deal in the way of jam making. We have been supplying the Elder Dempster line every week with their jam, generally 9 to 12 dozen jars every week for their different ships.

5364. I see you have a marmalade and jam factory. I presume they are fitted with all the necessary appliances?—Yes, and the students go into that department a fortnight at a time, and learn how to make jam and to bottle fruit.

5365. I suppose all this jam and marmalade is properly packed and covered in, and that sort of thing?—Yes.

5366. That is very necessary instruction?—Yes, only there is not a great deal of time for everything. They come for a fortnight and they learn exactly how to make jam, and if they are there for two years they would come for a fortnight in each term, and in that time of course they can do a great deal.

5367. It is a shorter course?—Shorter course.

5368. With regard to your poultry management, will you just explain how far you go with that?—We have about 500 I think now with our small chickens. We rear ducks also—

5369. I do not care what you do, if you will tell as what the management is. Do you do it by incubators?—Yes, by incubators and also by sittings as well. We have Mr. Palmer once a week to come and go round the whole of our stock and then we have a very capable teacher who takes the practical work when Mr. Palmer is not there.

5370. Do you go thoroughly through that from beginning to end?—Yes, absolutely, they do everything for themselves, they even kill.

5371. Do they cram and kill and bone?—Yes.

5372. And prepare for table?—Yes; they have the option of whether they kill or not, but otherwise they do everything.

5373. Packing for market?—No.

Miss
Faithfull.
30 May, 1907

5374. Then again that is the most important thing of all others, and you seem to me to leave out from your ladies' point of view, and Miss Crooke admitted the same, the most important thing, namely, the packing. Poultry sent to Leadenhall Market is absolutely useless if it is not properly packed?—But you see five of the students we have now will be going home to manage their own home poultry farms, and they will not want to learn packing. The other two would say to us, "We want to learn packing," and they would learn it: they would then go into our marketing department to learn that.

5375. Why may not the other five want to learn it as well?—I repeat, if they are going to manage their own farms they do not need it.

5376. But they will never have anything to manage if they do not breed enough to sell, and if they breed enough to sell they will always have to pack them and market them, so the knowledge is necessary for them. As a very large producer of poultry I am rather strong in my argument that I think you are making a serious mistake in not carrying it to a finality. I know as well as possible that if you open a box of peaches in a gentleman's house almost immediately the lady will say, "How splendidly they are packed," and that applies to every article in the way of horticulture and also in the way of dairying. The better butter looks when it is opened the higher the price it commands. All butter that comes from abroad is most beautifully graded and packed, and the same with fowls. All the fowls in Leadenhall Market that come from abroad are sent there packed in a proper way. Of course, they come from a long distance, and they are obliged to be properly packed, and I strongly advise you, if I may do such a thing, that the packing of all your articles is one of the most important things that you can possibly have to do?—Yes; I am obliged to you.

5377. To what extent do you go in for bee keeping?—We have 15 or 16 hives, and we have two to three days instruction, and divide our students into juniors and seniors for the bee demonstrations and lectures.

5378. I suppose you get your students quite expert in the way of driving bees, and that sort of thing?—Yes, they go in thoroughly for the examinations.

5379. Just let us go a little more into this, because it is rather important. Do they hive and drive the bees and extract the honey, and so on?—Yes, everything.

5380. Then with regard to bees, you do really have the whole finality—to the honey?—Yes, certainly.

5381. You finish that off?—Yes.

5382. Of course, you are expecting to keep your students up to a very high class of the present time, because your fees are almost prohibitive for anyone in a lower state of life?—They are.

5383. That is rather your anxiety, is it, to confine it to the higher classes?—I think so, certainly.

5384. Are these bursary students nominated by certain bodies?—No, a student would apply to me and I should take up her case first and then report to the Committee who I thought each term would be most worthy of a bursary.

5385. Who are these students who are nominated by the several county councils?—For the nature study course, do you mean?

5386. Yes. They pay something, do they not?—I really do not know, that was before I came to the college; they had that course in August, and I came in September.

5387. You say the Board of Education were favourably impressed with your application for the establishment of the scheme as to the future regulation of the college?—Yes.

5388. And that something will be done. Do you know at all what is likely to be done?—I hope they are taking over the college and appointing trustees.

5389. They are taking this over?—That is what we hope; we want something done to get the college on a more permanent basis.

5390. I should like to know what you do at shows in the way of exhibits to show what you are doing. Do you do anything in that way?—Yes. We send up regularly every year to the Temple Show, generally a vegetable exhibit. In 1902 we won the Royal Horticultural Society's Silver Banksian Medal for bottled fruit and vegetables. At

the Crystal Palace Fruit Show we won the third prize for bottled fruit, and prizes for poultry at the Reading Ornithological Show. In 1901 we won the Silver Banksian R. H. S. Medal for bottled fruit again. In 1903 we won the Gold Medal of the R. H. S. at Chiswick for bottled fruit. In 1904 we won the Silver Banksian Medal at the Temple Show of the R. H. S. for vegetables. We won, in that same year, the Silver Banksian Medal at the Birmingham Show for bottled fruits and jellies, etc., and the Gold Knightian R. H. S. at the Temple Show for vegetables. In 1905 we got a medal for an exhibit we put up at Birmingham for flowers and bottled fruit, and in 1906 we got prizes for dairy work at the Nuneaton Show. We also got the first prize at the Birmingham Show for grapes, the third prize at the same show for chrysanthemums and the second prize at the Temple Show for grapes. That was last year, which was our first year with grapes at a show at all.

5391. I wished to draw from you how far you were keeping those up and to what extent you were successful. I presume you have taken prizes for several of these exhibits?—They are almost all medals, not prizes.

5392. (By Dr. Somerville.) Have you a magazine in connection with the school?—Yes, *The Studley College Agricultural Journal*.

5393. Have you got an Old Students' Association that keeps you in touch with past students?—Yes, we have a guild.

5394. (Mr. Medd.) I think you made some remark to Lord Reay about the lecturers. Do any ladies from outside come to lecture at the college at Studley?—No, I do not think we have any lady lecturers from outside.

5395. Do your lecturers give lectures outside?—Yes.

5396. By whom are they employed?—Last year, for instance, there was a school at the other side of Birmingham, the head mistress of which asked if I had any student who was good enough to go and lecture to her girls. I sent her one of our students, and she was so satisfactory that, after she left us, they took her on there to regularly lecture for a month at a time.

5397. (By the Chairman.) You mean she gave lectures while she was still a student with you?—Yes.

5398. And she was so good that they retained her after she left you?—Yes.

5399. (By Mr. Medd.) With regard to the question of packing, it is very difficult to combine a business and an educational establishment, is it not?—Yes.

5400. When pupils are learning, a great quantity of the materials is spoiled, necessarily, and if you entrusted all the packing of delicate fruits like strawberries and grapes, and so on, to students, a large quantity of it would inevitably be spoilt?—Yes.

5401. In the absence of Government aid you cannot afford to incur that loss, and, therefore, you are bound to employ professional packers?—Yes.

5402. If you had more aid from the Government or from the local authorities, you would be able to dispense with that necessity, or, at least, you would be able to give more instruction in packing to the students themselves?—Yes.

5403. As Mr. Latham said the success of poultry keeping and fruit growing depends ultimately upon proper grading and packing of the produce?—Yes.

5404. Those things are only neglected at a place like Studley because you cannot afford to entrust the whole of it to students for the reason that a large quantity of the material would be spoilt?—That is really so.

5405. With regard to the future of the college, the college is placed under a scheme approved by the Board of Education, because the Board of Agriculture is not a body competent to do such a thing?—I do not know that.

5406. Lady Warwick transfers her rights in the college to a body of trustees?—Yes.

5407. I believe she has made a free gift of all the fixtures, stock and furniture?—Yes.

5408. In future the college will be maintained as a public institution?—That is so.

5409. Under a Government scheme?—Yes.

5410. There is only one other thing; I am sure you would be glad if any member of the Committee would visit and inspect the college before their report is drawn up?—I should be delighted to see anybody there.

Mr. T. H. WARREN, Vice-Chancellor of Oxford and President of Magdalen College, called and examined.

5411a 5411b 5411c (By the Chairman.) The Committee would be very pleased if the Vice-Chancellor of the University of Oxford would tell them what their plans are with regard to the advancement of agricultural education?—I think we stand at this moment and at this day in a very interesting relation. I think, possibly in a week's time I might have been able to say a little more in some ways than I can say now, because what has really changed the aspect of affairs in Oxford more than anything else is the advent of my friend on my right, our distinguished Professor, Professor Somerville, and in two ways, partly in what his appointment means and partly in what we hope he may do for us himself. His appointment means this, that one of the colleges, which is among the richest in income, and is one which holds a specially strong position in regard to agricultural land, and especially as an owner of agricultural and woodland round and about Oxford, has taken up in a serious and practical way the question of agriculture. We had, as you know, and as many know, an old-fashioned professorship called by an old-fashioned name, the Professorship of Rural Economy. That was held by various distinguished people, but the income attaching to it, never large, fell off and declined, and the professorship was for some time, you may say, quite in abeyance, merged in the Professorship of Botany; and, then, when it was revived it could only be revived in a partial and intermittent way. The system which was adopted was that of accumulating a moderate sum, and then appointing a professor for a short time. Under that arrangement we enjoyed the lectures of Sir Joseph Gilbert and of Mr. Warrington, and, of course, I need not say they were eminently scientific and valuable; but they did not produce a steady effect or attract students from the University, but now St. John's College has taken up the professorship seriously, has endowed it with a Fellowship and with a considerable subvention, and we have an experienced and able and practical man filling it, and we have every hope that everything that can be done for us he will do. I and many both inside and outside Oxford have felt that Oxford ought certainly to be one of the universities which should have a strong and working Agricultural Chair and Agricultural Department, and for various reasons. In the first place, of course, a very large part of the sons of the landed gentry, both small and great, have come for many centuries to Oxford, and many of these have to look to land either directly or indirectly as the chief occupation of their lives, and the source of their income; and then there are others who may become agents for them, and who are brought into connection with them, so that there is a natural interest both theoretical and practical which ought to centre in Oxford. Then, again, the colleges, as you all know, are many of them considerable holders of landed property. The college I have just spoken of is one. My own college, Christ Church, All Souls, and New College are large owners of landed property. Most of them have property beside their own property in and around Oxford over which they could exercise control and make available for the purposes of study or experiment. The colleges are influenced partly by the general waking up of the country to the value of science as applied to agriculture, and partly by the increasing stress of competition. Colleges are, I think, keen both on scientific grounds and on practical grounds to see their property improved by the applied science of agriculture. I have spoken of St. John's, and I might mention that my own college at the same time, or about the same time, has spent a moderate sum of money, about £600, in starting a sort of forest garden, or arboretum upon our own property at Tubney, not very far from the college. That brings me to another important point, and that is the advent of the Forestry School. I hope it may be expected, whatever happens, that the Forestry School to some extent may remain at Oxford. I should not wish to say anything prejudicial to the interests of Cambridge, and I have already said that if those who have had the charge of the Forestry School think well to establish a Forestry School at Cambridge that will be for them to say, but I hope the Forestry School now established at Oxford will remain, and will be a strong school. It has only been there about two years, but already it has taken root and is doing very well, and a large number of students are working there and are working hard. They are a nucleus of scientific students who have every incentive and every reason for working at their professional career. That again, I think, has brought home the opportunity and the possibilities of applied science both to the senior and to the junior members of the University. I have spoken of the general movement of the society, which I think is

hopeful, but in particular, as I am sure you would understand, Lord Reay, there is more understanding of the value of what is called post-graduate or graduate study of research. It is recognised that while there ought to be a good general education, a common basis if possible of education, provision must be made for specialism in various directions and in particular that some kind of reconciliation of what may be called professional or technical education, and science, science and general education, must be brought about, and that it is for the universities to bring it about; that they ought to set themselves to teach the scientific aspects and the scientific sides of professional and technical education. An immense work has been done in medicine in Oxford. I say immense, for it may not seem even now very much in numbers, but it is really an immense movement if you compare Oxford with what it was 30 years ago with what it is now, and the same kind of thing is taking place all over the field, and one of the ways in which the University sets itself to do this is by means of diplomas. We have now diplomas already established in a variety of subjects—in Geography, which is doing very well, in Economics, which is beginning to do well; in Mining and Engineering, which is only just begun; and I think we might without much difficulty persuade the University, with every encouragement from many sources, to start a diploma in Agriculture. That would be one of the fairly easy and promising ways, I think, of encouraging agriculture. For all those reasons I think there is an additional opportunity now and more possibility of promise than there has ever been before. Then again I think our friends from outside—the old members of the University, who are, I hope, beginning to take more interest in the University and to believe in it more, are inclined to encourage amongst other studies the study of agriculture. I know one gentleman at any rate, of considerable means in the neighbourhood is very keen to see this done, and he has already given practical evidence—I do not know that he would wish himself quoted by name at present—of his desire to support the widening of the Oxford curriculum by contributing a considerable sum, and I hope his example may be followed. In the appeal which Lord Curzon, our new Chancellor, and myself put out the other day, agriculture was one of the subjects mentioned by name and put in a leading position. I think those are the main factors of the situation, but perhaps I might now come to the reason why I speak of this exact moment as I do. Professor Somerville gave at his first term last year a very interesting lecture. He has now followed that up by presenting a memorandum to the Hebdomadal Council of the University. Only last Monday it came before us, and the Hebdomadal Council at once appointed a small but strong committee which was to work with Professor Somerville and go into the question, and I hope we shall meet next week and make a beginning and see what can be done, and I feel confident that we shall have the support of a good many in the University, and that we shall have the support of the colleges. There is only one other point which it occurs to me to speak about—I hope, of course, that you will ask me any questions that occur to you, and I will endeavour to answer them to the best of my ability—and that is about Reading College. I have not a great knowledge of the working of Reading; it so happens that I have not been personally much in contact with it, but I have every reason to believe, in fact it is a matter of common knowledge, that they have done very well, I do not think that their good work really at all cuts the ground from under the University of Oxford, or precludes the possibility or desirability of Oxford acting for itself. You must remember that there are a large number of students, especially those of the kind that I have spoken of, who will come to Oxford partly from family tradition, partly on account of their previous education, largely because they wish to get their education side by side with their comrades who are going into other lines, and who naturally come to Oxford and who will not go to Reading, do what you will. It is no discredit to Reading at all. Reading serves a most useful purpose, and we are very glad to help them in any way we can, but these students will not be induced to go to Reading; if they cannot get agricultural instruction at Oxford, they will after they leave Oxford, seek it elsewhere, and will be more likely to go to a distance than seek it at Reading. Then of course, Oxford has many advantages and opportunities in its larger scientific system which a university college like Reading, however it might develop, and although in some few particulars might do even better,

Mr. T. H.
Warren.

30 May, 1907

5411d

5411e

5411f

Mr. T. H.
Warren.
30 May, 1907

cannot expect to obtain. At one time I was inclined to think that perhaps we ought to let Reading try its experiment. I think to a certain extent Reading has tried its experiment, and tried it with a good deal of success, but I do not think we need, out of consideration for Reading, or with regard to what it is doing, hang back or hold our hands. I do not know that I have anything more to advance.

5412. Are the students in the Forestry Department matriculated students?—They may be divided into two kinds. For Forestry there is this diploma of which I have spoken—and I am glad you have asked that question, because it raises a point about which I think I ought to speak and make it clear. The essence of these diplomas is that they stand just outside the degree system. It is not necessary in order to gain a diploma to go through the same curriculum exactly as the degree. You may take the degree and the diploma as well, or you may take the diploma without the degree, and if you take the diploma without the degree, then a knowledge of Greek, for instance, is not necessarily required, and several other conditions of residence and so on are not nearly so strict, and when you ask, my lord, if they are matriculated students in the ordinary sense of the word, those who take the degree are matriculated students. The diploma is open to those who matriculate for the purpose of the diploma alone, and it is also open to students under certain conditions from outside who do not matriculate, but the bulk of them may be called matriculated students, and the majority of them are persons who not only take the diploma, but also take the degree. The Forestry students, it is hoped, and I think we see that it is so, are taking honours in some scientific school, e.g. in Geology and in Botany as well, or if they do not do that they take the ordinary pass degree, that they are certainly matriculated students, and most of the others, indeed the Forestry students you may say are roughly all matriculated students, although not all degree students.

5413. The school is accessible to those who are not degree students?—Yes.

5414. They have an entrance examination, I suppose?—Yes, they have an entrance examination of their own. The diploma is administered by a committee which prescribes what conditions it thinks fit. I ought perhaps to say that the diploma is a new one, and these arrangements are still under consideration; they have not been finally settled, and I think it is probable that they will be rather enlarged.

5415. Has a diploma in agriculture been instituted already?—No, it has not been instituted. I think it is probable that a diploma in agriculture will be instituted, and that the majority of students who take it would take a degree as well. I should hope so, and I should think that is what the University would aim at.

5416. You have not considered the question yet of having a farm for the purposes of the agricultural department?—No we have not got as far as that yet.

5417. Although, as you have said, the colleges, being owners of the necessary property, there would be no difficulty, whatever, in obtaining the necessary object lesson in the way of farms?—No, I do not think there would.

5418. I suppose you have a Chair of Biology at Oxford? In the old days, as you, Lord Reay, will, at any rate, understand, all these things were united in one—the Linacre Professorship—which included Physiology and Zoology and Anatomy. Now we have Physiology, which is one thing, and we have Anatomy, a separate thing. We only the other day established a Professorship of Anatomy, and we have a large department of Comparative Anatomy, or Zoology, which includes the study of animals of every kind, and that—again, has become very much strengthened and sub-divided. For instance, as Professor Somerville will tell you, Entomology is now being taught in connection with Forestry. We have, beside the Professor of Entomology, also called a Professor of Zoology, and a very splendid entomological collection, so that on that side we are strong. Again, Geology has grown enormously in the last two or three years. We have a very energetic and capable professor, and the University voted, only last Monday, £600 to put a new story on his department to find accommodation for his increasing students.

5419. (*By Mr. Acland.*) Do you think with development there would be a considerable proportion of those who are going to be, probably, landlords or land agents willing to take a course in agriculture?—Yes—I should not like to be too sanguine about that, because I think that a good many of them will take the ordinary education, and then, perhaps,

for one reason or another, will be satisfied with that, but, even making allowances for their wishing to get into life, or for other reasons, I still think, if agriculture were there, and the opportunity were given, a fair number of them would take it up.

5420. Do not you think that their taking it up depends very largely on their being able to get a degree through the study of it?—Yes, I think, that if it can be made part of the Degree Course for the Pass Degree, that would, in my opinion, be a distinct help.

5421. Would you not be in favour of making agriculture in the same way as you make Chemistry, an Honour Degree Course?—I should not like to say about that. I really do not think I ought to offer an opinion about that. I have not heard sufficient about it, really, as to what it would mean, or how it works elsewhere, and I do not think I should like to give an opinion about that.

5422. Could not you give an opinion, seeing, for the moment, that it is advisable, educationally, to have such a course, as to whether the existence of a Degree Course in agriculture would not materially increase the number of students who would be likely to take it?—Speaking off-hand, I am not inclined to think—this is only an off-hand opinion—that creating a separate school in Agriculture, ranking, we will say, with Botany or Geology or Chemistry, would be very attractive. I think you will find, for instance, that the great number of these young gentlemen I have spoken of take the History Course. They come from Eton, or Winchester, or Rugby, or wherever it may be, and when they come up the thing which they naturally take is History.

5423. My experience is, from having taken the History Course at Oxford, that the reason people take it is because it is supposed to be the easiest course to get a Degree in, combined with a certain amount of interest?—Yes.

5424. Would you agree with me that there are a considerable number of persons, particularly of the class you refer to, who come up to Oxford in order, primarily, to have a good time, and, secondly, to get a Degree in some course which has a certain amount of interest combined with it?—Yes, I think I would agree to that.

5425. Do you not think that a good educational course combining a considerable amount of the different sciences you have mentioned, could be devised which would attract by its interest, and which, also, would be a sound educational course?—If you mean in the same way that the History School attracts, I am not quite sure that I should say that. I think I should, like a Scotchman, rather ask another question, although I am not a Scotchman. Why do these people prefer History now, and why do not they take Botany or Chemistry or Zoology, which is open to them, and would not the same reasons which stand in the way of their doing that, stand in the way of their taking Agriculture?

5426. If I am in order in answering, I should say the study of any one of those particular sciences would take them very much further into the details of one single science than would be of any use to them in their after lives, and if there was a course which was quite satisfactory, from the educational point of view, and yet included such an amount of knowledge of those sciences as would be of real interest and use to them in any connection they might have with land, I ask you whether you do not think they would be much more inclined to take a course combining those sciences than to take a single detailed course in any one particular science?—I think that might be so. I think if Agriculture included a certain amount of Economics, and, perhaps, some amount of Law, and that kind of thing, it then would include elements of interest which the physical sciences alone do not include, but it is not easy to make an Honour Course very various. I think that it would be quite easy to put Agriculture into the Pass Course, which is, as you know, various. A student takes a pass, we will say, in Modern Languages and in Mathematics, or one group of science, and if he was to take Economics as one group and Agriculture as another group, and possibly, Modern Languages as another, I think that might be an easy thing to do, but I should not like, off-hand, to say that I think a course for Honours alone in Agriculture could be arranged which would be at once attractive by its general interest and also scientific. That is, rather, what I am afraid of saying.

5427. Do you agree that a course could be made an Honour Course which would be attractive? Is your fear rather that it would be against the principle of Honour Courses to permit such a course at Oxford?—I think my fear is that it would be a little against the principle of Honour Courses to try to make it too various.

5428. Do you rather agree with me that if such a various

course did exist it might be popular with the class which is likely to be connected with land?—Yes, I think it might. Of course the people who combine the literary and the scientific gifts are a limited class.

5429. (*By Mr. Latham.*) Where do you expect to get the students or undergraduates from to come to this course?—I should expect them to be drawn to a certain extent from the existing students who take other courses at present, and then from others who would come, who do not now come because there is no special opportunity in Agriculture.

5430. And cannot afford to come, I presume?—No, not only cannot afford to come in the strict sense of the word, but who do not think it worth while to come.

5431. Would they have the opportunity of coming by scholarships from other institutions? I cannot exactly see how the class that we should like to assist would manage to come any better than they do now?—You mean the sons of farmers of moderate means, and so on?

5432. Yes.—No. I think they would require scholarships. Of course, the expense differs very much. They could come as non-collegiate students, not live in the college, but come as students of the University at a very moderate rate.

5433. That is one question I was going to ask, whether they would have the opportunity of residing or not residing?—They would have to reside, but if they only came for the diploma I am not sure they would have to reside at all; at any rate, they would have only to reside for a short time.

5434. I presume as a matter of fact that the line is hardly defined yet?—No.

5435. Would Reading have an opportunity of sending to Oxford by scholarships?—I should think so.

5436. Do you think an unlimited number would be likely to come?—No, I do not think so. At any rate it would be some time before it reached any very large numbers.

5437. Can you say at all what would be the expense of a course there?—Of course, with regard to all these scientific courses the experience is that they are rather costly in themselves. The laboratory fees are considerable. A Forestry student pays a good deal more, and so does an ordinary student of Science or of Medicine, than a student of Latin or Greek or History.

5438. (*By Dr. Somerville.*) You are a member, are you not, of the Consultative Committee of the Board of Education?—I was, but I have ceased to be. When I became Vice-Chancellor I was obliged to resign, but I succeeded Sir William Anson for two or three years.

5439. You are quite familiar with the work the Board of Education is doing and with the general tendency of educational administration in the country?—Yes.

5440. I suppose the Committee may take it there is a greater and greater tendency towards the decentralisation of education is there not, that is to say that the county councils are being charged with greater powers?—Yes, certainly.

5441. I suppose the Committee may also take it that a considerable number of young men that pass through Oxford ultimately take their fair share of county work?—Yes.

5442. And will, in due course, I suppose, be called upon to assist in the administration of local educational schemes?—Yes, that is quite true.

5443. Living as they do in the country, I suppose that education in the direction of rural requirements is likely to be of quite as much importance to them as education of a more classical character?—I think so.

5444. Do you think there would be any particular advantage in offering to those young men when they are at Oxford the opportunities of becoming acquainted with methods of agricultural education and with the methods of agricultural experimentalisation and demonstration?—I certainly do. I think if Oxford, or Cambridge either, give these young men who are likely to be to a certain extent prominent, and leaders in their own district, more of a scientific outlook and an idea of what may and can be done through applied science, that that would be a very good thing.

5445. I think from what you have said, the Committee need have no doubts at all about Oxford being thoroughly well equipped as regards the power of supplying education in the sciences that are fundamental to agriculture?—No,

I think they need have no fear about that; that is a point that I feel confident upon. I think that there are one or two points. Chemistry, for instance, especially Organic Chemistry, requires in my opinion further development, but I think that will very soon come.

5446. So that to provide a well equipped agricultural department, it really only requires the addition of teachers in the sciences as applied to agriculture?—Yes, I think so.

5447. You of course cannot be expected to forecast the probable numbers that would frequent an agricultural department?—No, that is very difficult to say I think.

5448. But perhaps you may agree with the suggestion that I make that the numbers in the agricultural department of a university should not be strictly compared with the numbers, we will say, in a provincial agricultural college; that is to say that the ultimate influence of a small number of agricultural students in a university is likely to be very much greater than the influence of a similar number in a provincial institution?—Yes, I should agree with that.

5449. In other words the men who will pass through a university course are likely, to a large extent, to become teachers, lecturers, and demonstrators?—Yes, I agree with all that.

5450. I suppose there is no particular reason for thinking that the number who might frequent an agricultural department in Oxford would be inferior to the number requesting the corresponding Department of Cambridge?—No. What is true of one is true of the other; there may be little differences, but on the whole you can almost always argue from one to the other.

5451. I suppose also in Oxford, as in Cambridge, education alone would not be the sole function of the department, but probably the workers in that department might take their fair share in advancing agriculture along the line of research?—I should certainly hope so.

5452. You have already been asked some questions with regard to the cost of living in Oxford. Do you think it is conceivable that a non-collegiate student who would endeavour to economise and live in a careful way might get through the academic year on under £150?—Including his fees?

5453. Yes—I have no doubt about that.

5454. (*By Mr. Medd.*) Have you formed any idea yet of the probable cost of establishing the agricultural department?—No, I can hardly say that I have. Anything that I know I think has been rather suggested to me by Professor Somerville; I have not really gone into it.

5455. Or the cost of maintaining it?—No; there again I do not think that I could give an opinion of my own.

5456. What available financial resources have you for the purpose?—Of course the teachers would be paid in this sort of way—there is the professor, who is endowed, and I should hope that the University in some way or other would pay a demonstrator or assistant. If he were a man of distinction, a college might, perhaps, give him a Fellowship in payment, or probably in part payment. If you had a good demonstrator, and it became very necessary to retain him, and it was a question of his stipend being increased, it is quite possible that a college might come to his assistance with a Fellowship. Then there would be the need of a departmental grant; that is generally made by the University either out of its ordinary resources or for a time through what is called the Common University Fund, but ultimately from the resources of the University. Then in reduction of these expenses of the University comes the fees. At first the fees would be very small. The students would be a handful, but if the students increased, and became any number from 25 to 50, we will say, the fees would then become a very considerable source of income, and they would go in reduction of expenses. Then I suppose we should hope to get some assistance, as other institutions have had in a matter of this kind, from the Board of Agriculture, and of course if we made ourselves a centre for any county or number of counties, it is possible that they might give some assistance, though I suppose they would be more likely to give it in the way of scholarships than in any other way, and so in that case the assistance would only come to us in the form of fees.

5457. You have no endowment at Oxford that could in future be applied in this direction which has not been used to the best advantage hitherto?—No, I do not think so. Of course, you understand that the colleges are different from the University; the colleges within certain limits

Mr. T. H.
Warren.

30 May, 1907

Mr. T. H.
Warren.
30 May, 1907

control their own property. There are one or two colleges which are charged with assisting the university in special ways. All the colleges have to contribute by a sort of system of graduated income tax to the University, but some of the colleges have special funds over which they have control and can say, "We should like our contribution to go to agriculture," or "We should like it to go to engineering," or "We should like it to go to geology," or whatever they might choose, and I think it is possible that some of the colleges might be inclined to give a preference to agriculture.

5458. I merely make the remark now, because the Board of Agriculture make it a condition of giving any grant that there shall be a corresponding local contribution?—Yes.

5459. And of course every day it becomes more and more difficult to get contributions from local authorities?—Yes.

5460. For instance, the total expenditure at Cambridge is between £3,000 and £4,000 a year. Of course they have contributions from adjoining counties. I believe a few years ago Mr. Martin Sutton made an offer to the University of an endowment corresponding to Sir Walter Gilbey's at Cambridge, did he not?—I believe he did. I was not in the University Council at that time, and I did not hear the details, so I do not know exactly what it was.

5461. You would probably approach him again when the scheme had become more matured?—I should think we very likely should.

5462. He was giving evidence here the other day and spoke with the greatest interest and approval of the idea of an agricultural department at Oxford, and he seemed disposed to make a renewal of his previous offer. If you are in favour of the formation of an agricultural department, would you wish certain counties to be affiliated to you, and certain schools and colleges, as they are at Cambridge?—Yes, I think we should.

5463. And you would desire that the agricultural education within that area should be completely organised, looking to you as the head and chief centre?—Yes, if they were willing I think we should like that.

5464. With regard to the question of degrees, you insist upon residence for a degree?—Yes. May I say this? We insist on residence for all degrees, but there are now the degrees of Bachelor of Science and Bachelor of Literature for which the residence is considerably less, and for the Arts degree—I do not know whether that is of much importance.

5465. Yes. What is the minimum period of residence?—It would be something like two years, but it could be further reduced by residing in the vacation.

5466. In the case of Lampeter, Lampeter is affiliated to you?—Yes.

5467. You do not consider a student at Lampeter is a student at Oxford?—No, but of course the time put in at Lampeter counts at Oxford and knocks off, to use a vulgar expression, a certain amount of time.

5468. A student at Lampeter would have to come to you for two years?—Yes, quite so.

5469. In the event of Reading being affiliated to Oxford, the Reading student would have to come there and reside for the Oxford diploma?—I would not say necessarily for a diploma, but for a degree he would.

5470. The point should be considered, if I may say so, because at present the Reading students go to London, and of course it is very much to their advantage to obtain a diploma or a degree without further residence, so that in any scheme at Oxford if the period of residence for a diploma could be done away with in the case of students at an affiliated college it would be of very great assistance?—Yes; that is a very important point.

5471. Similarly at Cirencester, we hope Cirencester may be affiliated to you if you become a centre?—Yes.

SIR OLIVER LODGE, F.R.S., D.Sc., LL.D., called and examined.

Sir Oliver
Lodge.

5472. (By the Chairman.) You are the Principal of the University of Birmingham?—Yes.

5473. We had some very interesting evidence given us by Mr. Walter Collinge concerning the Department of Economic Biology, so that we have got the details of that, and, perhaps, you will state to the Committee what the intentions are of the University of Birmingham with regard to the development of an agricultural department in the University?—The department, at present, is economic zoology; but we hope it may soon extend. Professor Hillhouse has long advocated an agricultural development; but a consideration of agriculture by the University began, so far as I am concerned, at a dinner at Highbury. Mr. Chamberlain and the authorities of Worcestershire wanted to do something for the University, and I, being then consulted, suggested a veterinary department, animal diseases, and so on. That was looked into, but we found that it was too large a thing, altogether. To do it properly would require an animal hospital, and it seemed beyond anything we could immediately contemplate. Nothing was then done, but Mr. Collinge, being an enthusiast, started on his own account, a thing which has developed into the Department of Economic Zoology. He started travelling about the country and advising the farmers freely, and at his own expense, thereby, of course, gaining a great deal of experience as to those insect pests which are his specialty, and which do an enormous amount of damage in the fruit districts of Worcestershire, Warwickshire, Herefordshire, and so on. Then I drew up this statement: "Statement by the Principal. The advantage of a department for, or school of, Agricultural Research." I only quote a few sentences from it: "The subjects to be dealt with in such a school are first of all the diseases of plants, concerning which farmers are extremely ignorant, secondly, the problem of increasing the fertility of the soil, thirdly, production of useful varieties of cultivated plants. The study of plant diseases is manifestly a supplement to the study of animal diseases in a Veterinary Institution, and it can be conducted on somewhat similar lines, expert advice being available for the use of County Council Authorities for the detection, the treatment, and the avoidance, of such diseases; including among the diseases,

parasites and all foes both animal and vegetable. And by agriculture is to be understood, not simply farming operations of the ordinary kind, but also market gardening, and the culture of fruit trees, forest trees, and all other horticultural operations." Then I have appendices showing how seriously this matter has been dealt with in Canada, in the American States, in Japan, and in Germany. Gradually the matter became more important in our eyes, and at last a Special Committee was appointed by the Council consisting of the Chairman (myself), the Vice-Principal, the Dean of the Faculty of Science, the Dean of the Faculty of Commerce, the professors of botany, pathology, chemistry, and zoology, and another, the professor of metallurgy, because he happened to have been the Director of the County Council of Staffordshire at one time; and they, after many sittings, drafted two schemes, one for a complete school of agriculture, involving degrees and so on. This scheme entailed complete research, teaching and co-operation, with local institutions and advising of farmers and growers, generally, and distribution of information. It was a large scheme which would involve a capital expenditure of £40,000 and a maintenance expenditure of £4,000 a year. At the same time they drafted a smaller scheme for a school of experimental investigation and research. This diminished the teaching to almost nothing, left the research much as it was, and the co-operation and advice much as it was, and involved no degrees and, indeed, not, explicitly, a diploma. That, of course, comes to much less money, but still it comes to a good deal. The first involved an experimental farm of 200 acres; the smaller scheme involves an experimental station of 50 acres, with a total capital cost of £16,500, and a maintenance cost of £2,200. At that time, as at present, the University had no money. These schemes were drawn up largely at the instigation of the Chancellor, who thought that possibly a donor might be forthcoming for a considerable sum, such as £50,000. I do not know what might have happened if Mr. Chamberlain had not, unfortunately, become ill. All that has actually happened, so far, is that we have established Mr. Collinge in the way he has explained to you, into which I will not further enter, on a very small scale, at the expense of the general funds, because we have no

5473a

5473b

Sir Oliver
Lodge.
30 May, 1907

special fund to draw upon. All the funds of the University are already over-taxed, but we realised the importance of taking a step of some kind, and of making a start so that we might have a going concern to show if anyone was willing to provide us with funds to do it more properly. I think it best to proceed now, if we had small funds, on the line of evolution from this and develop that department. At present, it is not on a satisfactory basis. We are not paying Mr. Collinge a proper amount; he is still put to a great deal of personal expense, and I should like, myself, though, of course, I cannot commit the University, to see his energy in the district rewarded by improving his status, giving him a position of a professor, not calling him so, but calling him director of the station, which would be a term which would be better understood by the people with whom he has to do in the county. He would be able, with an assistant and a laboratory boy, and a small laboratory grant, to look after the zoological department. At present, he is technically subordinate to the professor of zoology, he having been demonstrator to that professor for 15 years, and I think he would like now to be independent, and it would be right that he should be. His old place has been filled up. We want, therefore, to give him at least £500 a year, which is the minimum professorial salary; most get £600, or more. In addition to that, we should like very much—in fact, we find it necessary—to have an expert on the botanical side, especially in the matter of fungus diseases, a mycologist of equal standing with Mr. Collinge; but the cheapest way would be not to put him on a level, but to have him subordinate to Mr. Collinge, as a specialist in botany; we could not get him for less than £200. The other expenses that we should have to face would be a couple of assistants; we should have to make a laboratory grant, say, £200 for the two—£100 each. At present, we rent rooms, which come to about £100 a year, including rates, water, gas, and so on, and for travelling expenses, and the issuing of reports—£50 each, we will say—and a clerk has been found necessary, because of the enormous amount of correspondence and questions that come from the different districts—£100. We cover a large area in the Midlands, five or six counties, and the travelling comes expensive, and also the issuing of reports. I estimate that that would amount to about £1,250 a year. If we had more money we could go further and start a man on animal diseases as well—not on a large scale, but just enough to advise the farmers about the diseases of animals. I have drawn up a rough estimate including that and it amounts to £1,750. One of these two I regard as the minimum scheme if we do anything at all; but in order that we may start wisely and not overlap what the counties are doing, we have appointed an Advisory Board of Agriculture with representatives from all the neighbouring counties. This Board is to sit about three times a year, together with the Professors concerned, and they will keep us in touch with what they want, what we ought to be doing and also with what their own schemes are accomplishing, so that there shall be no overlapping, and that we shall be doing what is really wanted. We asked Sir Richard Cooper to be chairman of that Board, but, although he takes very great interest in it, he nominated another chairman, although, practically, he is the chief man on the Board, and I have reason to believe that if we are assisted with funds he will do something to supplement them. I mention these matters because it is money that is the vital question with us. It is not at all difficult to get men who are interested, indeed, we can get men with enthusiasm, but we are constantly hampered by having no money. Of course, the College has some money, but it is more than used for other purposes, and I cannot even ask the Council to make grants for these new departments at present; we have started too much. But we have very much felt the importance of this new departure in the way of agriculture, and nothing but money prevents our carrying it out; the will is quite good. I do not know, my lord, whether I have said the kind of thing that you wanted me to say, but I wished to represent to you the attitude of the University, as far as I could at the present time, and what we should like to do if we saw our way in the future.

5474. Does that scheme to which you have alluded, and which you will hand in the details of to the Committee, represent your views, or have you any observations to add to it. The Committee would like your views as to the organisation of an Agricultural Department at the University?—I cannot pretend to be an expert in the matter.

5475. No, but you have, I daresay, given a considerable amount of thought to the subject?—I myself would rather proceed cautiously and not try to launch out too big a scheme at once. I have felt that a scheme of 200 acres and a capital expenditure of £4,000 a year was shoot-

ing rather too high and before we had got sufficient experience. Certainly before we did anything of that sort we should have to get an expert on the staff and proceed with the help of his advice; indeed, that would be one of the first things we should have to do. We have always, in starting a new department, appointed a professor first and let him begin to organise it. What I myself feel so strongly is not so much the need for degrees in agriculture and a faculty of agriculture, although that may be very important, but the need for more agricultural research. It seems to me that so many things could be done with the soil of this country which are of vital importance; and that the expenditure would be easily repaid by the better quality and quantity of the produce. At present things seem to be carried on, so far as I can make out, in rather an ignorant fashion. Here and there a cultivator of the soil is a man of considerable intelligence, and is able to try experiments and get experience for himself, but such people are rare, and on the whole this very important industry seems to be carried on in a manner which is not calculated to keep the country in the van of progress; and I think that a university, being the centre of a large district, might very well serve as a centre for this research and for distributing information: not only for doing a certain amount of investigation itself, but of course for keeping in touch with what is being done in the rest of the world and seeing that that is known and quickly applied.

5476. I suppose you are of opinion, Sir Oliver, that the Board of Agriculture would be fully justified in spending money on the encouragement of research at the Universities?—I am indeed. I think that that is where this country is so behind at present.

5477. Apart from scientific motives, even from the purest utilitarian motives in the way of assisting agriculture, practically you would expect from the development of agricultural research at the Universities great benefit to accrue to the practical agriculturist?—That is my opinion.

5478. You lay stress on that?—I lay great stress on that; indeed, it is from the practical point of view that we have been looking at it all along, much more than from the scientific point of view. It is such an immediately repaying study. The experiments at Rothamsted no doubt have had some effect already with regard to manures and things, but there is a great deal to be done; the subject is a very large one indeed.

5479. It is a field that has been very much neglected?—I should say so.

5480. Especially as compared with what is done in the United States and in Canada and in Germany?—Yes.

5481. We are not up-to-date?—We are not by any means up-to-date with what is being done in Canada and the States, and, I believe, also in Japan, but certainly in Canada and the States it is very clear that they are much in advance of us, and have regular machinery for distributing information in the way of bulletins, which are no doubt known to you.

5482. You attach great importance to disseminating information?—Yes, but I find that documents are not sufficient for the farmers; they will not read them. Documents are distributed by this Board, but it is very difficult to get the farmers to read them, and to get them into their minds, unless it is done personally. We have carried that principle out, and have got into communication with them and consulted them and advised them without charging any fee. If we were to charge a fee they would think we were trying to get something out of them; but, as it is, several farmers who at first would not allow us on their land at all are now quite willing to give us every facility. We find in the whole of our county and in the adjoining counties the same thing, many are now perfectly willing.

5483. You have been very fortunate in the appointment of Mr. Collinge, who has obviously secured the confidence of the farmers in your neighbourhood?—Yes, I think he has been quite successful in doing that; and it is easy to judge of that by the calibre of the men who have come largely at his request on to the Board to advise us. Mr. Collinge is an enthusiast in the matter, and it was because there was the man already there that we made the appointment. I think that is rather the best way of making appointments sometimes, when there is a man on the spot, instead of looking out for a man to give him a specific berth: at any rate that is what we have done in his case.

5484. (By Mr. Acland.) Have these two schemes which you have referred to been framed with a view to

Sir Oliver
Lodge.
30 May, 1907

a probable existing benefactor, or just in case a benefactor might happen to come along?—I will answer your question, but I should like no note to be taken of what I say. (*The Witness made a statement.*)

5485. Did I understand you rightly to say that you would not be likely to get contributions from local authorities towards any department you might set up?—The county authorities are quite friendly with us, and I have not abandoned hope; I have rather some hope of getting, for instance, out of Staffordshire £200 a year more, but they say that their funds are already occupied, and well occupied, and that to give us that they would have to take it from somewhere else, and I hardly like to press them at the present time.

5486. You know in other parts of the country, for instance, in the three Ridings of Yorkshire, they contribute a large sum to the University of Leeds for agriculture. You think it would be difficult to get that in the Midlands?—Yes, I think so. Stafford gives us £500 a year, and Worcester gives us £500 a year, but not earmarked; it is for general purposes, and we are trying to get Warwickshire to do the same, but it has not done so yet.

5487. Do you think, if they consented to ear-mark a portion of the money to agricultural purposes, that it would assist you?—Possibly. We certainly have a claim on Warwickshire, because we are taking a number of students from their district, but at the same time they regard themselves as poor.

5488. Would you say pretty strongly that there is a considerable strain already on any resources which the counties have for secondary education?—Yes, and I do not think we could get more than £200 extra out of them. Besides the Department of Economic Zoology and Botany which I have mentioned, the scheme provides for a Department of Agricultural Chemistry and Agricultural Bacteriology. The chemistry I do not press, because I think the biology side is more important. I suppose I may say the biological side of agriculture in many ways has become very much more prominent since the discoveries of Pasteur. Whereas everything used to be treated as chemistry, everything now has a biological side; it is in that direction that advance is possible, and it is in that way that I want it to specially develop, so if we had two or three men they would all be of a biological character. That is the direction I want to proceed in. That is the side that has been less worked on than the chemical side in the past.

5489. (*By Mr. Latham.*) Mr. Acland asked you a question as to whether, if money were ear-marked, would not it assist you? Do not you think the ear-marking of money, so far as agriculture is concerned, is almost a matter of impossibility?—It is very much a matter of accounts, is it not? Of course we have ear-marked money for scholarships.

5490. That is rather a different thing?—For administration purposes it is rather a matter of accounts. They might, however, increase an existing grant because we were doing agricultural work.

5491. That would not be quite ear-marking it?—Not quite.

5492. You told us you do advise the farmers, but you did not say how far that work was carried?—I think Mr. Collinge gave you that information yesterday. The farmers write to him when they have something they require advice about, blight—or whatever it may be—and ask him to come down and advise them, and he goes down and advises them what to do if he is able to deal with it on the spot, but sometimes it is very puzzling, and he has to bring it back and study it in the laboratory. He is so busy doing that kind of work that we are going to provide him with an assistant.

5493. What would be about the cost of students coming to this agricultural department provided it was established?—You see we have not gone in for the educational side much. This minimum scheme that I am now speaking of contains no provision for ordinary students. We thought that we might get some senior students sometimes, as from the Harper Adams College or from the one at Kingston, Derby, or some other trained men coming to us to get experience rather in the nature of research—an assistant in fact, rather than a student. The students are studying their ordinary subjects under the ordinary staff of professors, but they would not come into this department except as assistants. The investigations that go on in the laboratory are above the ordinary agriculturist, but it is

boiled down and put into such a form by the men who go about among the farmers that they can appreciate it.

5494. That is in the way of lectures and demonstrations. —We would not expect the agriculturist to come to many lectures. Very few lectures are given. Mr. Collinge has lectured once or twice to gardeners, or to some special class of men, but it is not easy to do it by lecturing, partly because the farmers are distributed all about. I am not quite sure of the class of students you mean—whether you mean those already engaged in agriculture, or those preparing for an agricultural profession.

5495. What I am interested in myself is the ordinary agricultural farmer's son. Ever since I have been sitting here I have listened with some interest to try and see where I can see the ordinary farmer's son is to benefit by this investigation, and I want to know whether you think your scheme would be of any value to them, or whether it would not be above, I will put it, the ordinary farmer's son?—Yes, I think it would. It was debated whether we should try and fit ourselves up as an agricultural college, and it was thought we had better not do that because we should be competing to some extent with the agricultural colleges which already exist.

5496. Are they very thick round you?—No; there is the Cirencester and the one at Kingston, Derby, and the Harper-Adams College in Shropshire.

5497. They are not very near you?—No, not very near.

5498. And the ordinary farmer's son could not afford to go that distance?—I confess I should hardly have thought they would want to go to a place like Birmingham for agriculture.

5499. I agree, and possibly it might give them a great dislike for it if they did, but where are they to go? Are not these the very men that need it?—My idea is that the majority of boys going into farming would not want such a complete course as the University would give; they would want something less; and we had better reserve ourselves, at any rate until our funds are more advanced than they are, for the cream of the fellows who are going into the higher walks, so to speak.

5500. I must ask you what class of man that is?—Lond agents, or men of that kind. I expect you know a great deal better than I do the class of man I mean.

5501. No, I will not say that. I am an agriculturist myself, and I want to do my brethren the greatest possible good I can by sitting here, and I want to know how they can be improved by the education that this institution can offer, and I am so afraid that the expense will shut them out from that?—I do not see how we could provide for a large number of students except by what we call here the larger scheme.

5502. I think nothing of your little scheme; it is the larger scheme that I refer to?—The larger scheme would provide for a considerable number of students, and the fees would not be very heavy because the fees never pay for the expenditure.

5503. You have spoken of the great benefits that foreign institutions receive from some scheme of agricultural education. How is the money provided in these countries? I think by the government department of agriculture in those countries.

5504. It would be no serious matter to ask our Government to supplement the grants for the benefit of agriculture in the same way would it?—I should think certainly the Board of Agriculture should have much more money than it has now, if it is to do a proper amount of good.

5505. I quite agree.—But when one enters into educational matters there seems a chance of overlapping the Board of Education, but I do not know how that is. A University is not subject to that Board. You were asking what would be the advantage to agriculturists. Quite irrespective of teaching the young fellows, there would be a considerable advantage if the methods were improved and they were shown how to tackle the diseases and how to deal with the other problems which occur in their ordinary work. If the mass were taught in the field empirically without necessarily a great scientific basis being laid for them all, it would be of value; because I do not think it is likely that they would all be competent to take a scientific course where it would be necessary to go into the thing properly. They could receive information from those who have so studied the theory and be able to apply it.

5506. Is it your opinion that the education in agriculture

Sir Oliver
Lodge.

30 May, 1907

would be very much better carried out through the Board of Agriculture than through the Board of Education?—I should not like to answer that without thinking more about it. I do not think that I could answer it.

5507. In all probability, is it not so abroad—that it is done through the agricultural committees?—I do not know whether the Government departments of agriculture subsidise the Universities very much in America. There is a regular large department of agriculture for disseminating information and for carrying on work, but I am not sure that they take it up on the educational basis exactly.

5508. I take it that your great object in asking for these schemes is because such schemes cannot go to the less important bodies; it must go to the University?—Yes; if the big scheme is to be done at all it must be done by a University.

5509. (*By Dr. Somerville.*) I think the Committee may conclude that your greatest hope for the future, as regards development in Birmingham, is the direction of agricultural research?—Yes, the immediate development, in a very large sense, of agricultural research.

5510. And also in the direction of advising cultivators?—Yes.

5511. Personal association between the members of such an agricultural staff as you may set up, and the men who are concerned with the practical problems of the soils and of the stock?—That is so.

5512. It has been argued that there is no reason why, if the Government should provide the *personnel* necessary to advise farmers in their calling, they should not also provide similar advisers to assist other British subjects who are engaged in such industries as chemical manufacturing, iron and steel working, coal working, dyeing, and the like. I am not quite sure that I have heard a perfectly satisfactory answer to such a line of argument; can you tell the Committee why you think the Government should provide State aid for the supply of advice to those engaged in the agricultural industry, and should not supply similar advice to those engaged in other British industries?—Yes. That is a very interesting question. It seems to me that the land and the increase which we get out of the fertility of the soil by the help of the rays of the sun put agriculture on a different basis from all other industries. The human race is totally dependent on solar radiation, on the energy it gets from the sun, and the only way of getting that energy is by the surface of the earth. There is no other real increase, that I know of, in the same sense, that can be got in any other way; and whereas many manufacturing industries are carried on for private profit and result in luxuries and conveniences of various kinds, the agricultural industry results in the food of the people and is a necessity for all. It is of greater importance, of more primary importance, than any other industry; and of enormous importance, I suppose, during times of war. It seems to me that so little study has been applied to the problems connected with the fertility of the soil that we hardly know what could be done towards the making our country self-sustaining in this matter and able to grow its own food. We have never really made a serious attempt in that direction. If such a result is desirable, it can only be carried out after scientific discoveries and with the help of the application of them; and the matter seems to be so important to every person in the community that it is properly a national undertaking, and, properly, should come from the national purse. That is the line of answer I should try to give.

5513. So that you think there is something inherent in the province of agriculture that warrants State aid, and that does not apply in the case of ordinary commercial or mercantile enterprises?—I do.

5514. You think, therefore, there is nothing inconsistent in State aid being given for the development of agriculture beyond what is given towards the development of many other industries?—Yes, which are of a more local and less universal character.

5515. (*By Mr. Medd.*) With regard to agricultural research, do you think that its development at such a centre as you contemplate would be promoted by a consultative or advisory committee being appointed and meeting periodically in London, and upon which your University would, of course, be represented?—To unify the efforts in different districts?

5516. Yes, to put one area into touch with another area?—I should think that it would be better to keep up a kind of local self-government in this matter, and not try to over-centralise. I think it is found generally, with a body of sufficient magnitude and dealing with a sufficient area—it should not be a hole-and-corner piece of work—that

such a body is better with full autonomy and full responsibility for what it is doing; and I should be sorry to see a central committee, with all the different universities and districts represented upon it, and trying to make a single unified scheme. I think it would be better for each university to work out its own scheme. Some would be more successful than others, and those which were more successful would be imitated. By that means a great number of experiments can be tried at the same time, and we should not be put into shackles and leading strings too much, but would take the benefit of local circumstances and develop on our own lines.

5517. I may say that it is not suggested that the consultative or advisory committee should exercise any control over the local institutions, but should act rather as a channel through which the local institutions could communicate with the Board and bring pressure to bear on the Government, and keep itself in close communication and touch with other local institutions. That would be the limit of its operations, in so far as the local institution itself would be concerned. What is the exact constitution of your present Committee or Board of Agriculture. You have a Committee or Council, have you not?—Yes, just recently started. It consists of a delegate from each of the neighbouring counties.

5518. Which are they—I think Mr. Collinge told us yesterday, Derby, Stafford, Worcester, Warwick, Leicester, and Shropshire?—Yes—and Herefordshire.

5519. What are its functions?—That is not the whole of the Committee; those are the outside members of it. There are also the Professors of Zoology, Botany, Bacteriology, Chemistry, and Brewing, also the Dean of the Faculty of Science, the Principal, and the Vice-Principal. At present it is purely advisory—in any case it will be that. It will report to the Faculty of Science any recommendations made. That will go before the Senate, and finally to the Council, who is the supreme power and can pass it into operation, and who holds the purse-strings.

5520. Have you approached any of these Councils with a view to their becoming definitely affiliated to you for the purposes of agricultural education?—No. There is some talk of co-operating with places like the Harper-Adams College.

5521. I was thinking rather, of such counties as Worcestershire becoming affiliated to you as a collegiate centre for agricultural education and making a financial contribution to you. Perhaps you have not got to that stage yet?—No, we have not got to that stage yet.

5522. Do you propose to give a degree or a diploma in agriculture?—If we can carry out one of these larger schemes, but not with the minimum scheme.

5121. With the larger one?—With the larger one, certainly.

5124. That would be the ultimate object?—Yes.

5125. How far do you insist on residence in the case of degrees?—We always insist on a three years' attendance.

5126. You do not grant a degree in any subject without residence?—No; they must first matriculate and then they must pass three years—in some subjects it is four.

5127. Have you any institutions of education affiliated to you now not in agriculture?—No, we have not. There has been some talk of affiliating a training college for teachers at Handsworth, but it fell through. What we should have done there would have been to accept their instruction up to an intermediate stage, but we should still have insisted on their coming to us for the final two years.

5528. That would mean a year less at least?—It would mean our letting them off one year: when sufficiently prepared they could do our work in two years.

5529. You do not contemplate abandoning any part of the residence?—No, we must stick to that by our charter; that is a vital thing. We are a Teaching University. There is the external University of London, of course.

5530. Yes, I had that in mind. You referred incidentally to the danger of overlapping with the work of the Board of Education in these agricultural institutions and so forth. Are you at all familiar with the organisation of agricultural education on the continent?—No, I am not.

5531. Do you not think that all overlapping may be avoided if the work of instruction so far as it is of a technical character bearing directly upon the industry of agriculture is under the Board of Agriculture, and general education so far as it bears upon the training of teachers in elementary schools and so forth remains under the Board of Education, the sphere of the one being educational

*Sir Oliver
Lodge.*
30 May, 1907

and the sphere of the other being technical as applied to a particular industry?—I quite feel there might be discrimination of that kind. We have several Boards in the University, each of which practically governs a particular department.

5532. That is the rule in Holland and France and Ireland and you believe it is quite possible to work it so in England?—To discriminate between general education and technical education for the final years especially. In the early years all would come rather under the general education.

5533. Yes. I might put it in this way, that all that is given in the elementary schools, the secondary schools and the colleges comes under the Board of Education, but what is given in a technical school in the way of agricultural education, that is the education of the farmer, comes under the Board of Agriculture?—Yes.

5534. The central department at the Board of Agriculture at Washington is not responsible for the States?—I believe that is so.

5535. The agricultural education is organised under the Murrell and Hatch Acts by each State itself?—Yes. We are not under the Board of Education at all as a university, except in the matter of the training of teachers. The Board of Education has to do with us in the training

of primary teachers, and I suppose secondary teachers too, but in no other way.

5536. Does the Technological Branch come into contact with you at all?—No, it comes into contact with the City Technical School.

5537. That is not incorporated with the University?—No, it does not touch us at all: we are quite independent of the Board of Education in our Technical and Scientific Education.

5538. You have a School of Engineering?—Yes, a very large one.

5539. And a School of Brewing?—Yes.

5540. Have you any Government aid for that?—No, we do not get any Government aid for the engineering or the mining or the metallurgy, or anything except the general grant we get as a University College; and another grant for University purposes. That is all; there is no specific aid for special subjects.

5541. I may take it you are of opinion that it would be better to retain the work of education in so far as it is technically directed to agriculture in the hands of the Board of Agriculture?—I doubt if I see the full bearings of the question; and a sudden judgment would be of no use.

TWELFTH DAY.

Tuesday, 4th June, 1907.

PRESENT

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

Lord MORETON.

Mr. DAVID DAVIES, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Colonel S. T. H. BURNE, called and examined.

*Col. S. T. H.
Burne.*

4 June, 1907.

5542. (*By the Chairman.*) You are the Chairman of the Board of Governors of the Harper-Adams Agricultural College, Newport?—Yes.

5543. And you are also Chairman of the Finance Committee?—Yes.

5544. Then perhaps you will explain to the Committee the will of Mr. Harper-Adams and the scheme which was approved by the Charity Commissioners?—The testator devised all his property "and the investments thereof upon trust that the trustees should apply the income arising therefrom, or the capital thereof, in such manner in all respects as they should in their absolute uncontrolled discretion think proper for the purpose of teaching practical and theoretical agriculture to men and youths and a knowledge of dairying, housekeeping, and other subjects, to women and girls, which will tend to make them practical and useful women in their station of life in England, either by means of lectures or by establishing a school or schools of agriculture at Edgmond or Woodseaves, near Market Drayton, in the County of Salop, or at Chadwell, in the County of Stafford, or elsewhere in England, or by such other means as they or he should in their or his absolute discretion think most likely to give effect to the purpose aforesaid, it being his intention that they or he should not in any manner be restricted in such means by anything therein named, but so, nevertheless, that no part of the said income or capital should be applied in any manner which should in any wise be invalid under the present or any future statutes against mortmain, and the testator

declared that the trustees or trustee might invest in trust moneys in the purchase of hereditaments in England or Wales which should be required for actual occupation for the charitable purposes thereinbefore declared." The fullest possible powers, I think, are given that could be given to the trustees to use the money for agricultural education.

5545. What year was that?—The will was dated October 28th, 1891, and the testator died on the 7th June in the following year, 1892.

5546. What was the sum left?—The net amount that the trustees handed over to the Governors under the scheme was £45,496; that included £6,740 accumulated income.

5547. And how much of that was spent in the erection of buildings?—The actual cost of the buildings was £22,260. Then, of course, there was about another thousand pounds on other preliminary expenses which brought up the capital charges to about £23,000 altogether.

5548. Was the remainder invested?—£31,800 was invested, but of that a certain portion, £5,000, had to be sold out to meet the expenses, because we had not sufficient in cash to provide this £23,000, and we had to take £5,000 out of the previously invested money which would reduce the invested money to the nominal value of £26,000; and that, I believe, is about the amount. I cannot say what the value of it is at the present time. On the purchase price it should be £26,000.

5549. Then the County Councils of Shropshire and

Staffordshire support this?—Shropshire has been very liberal in its support up to this year. They gave us a grant of £2,500 at starting for equipment, and for six years they have provided £800 a year.

5550. And Staffordshire?—Staffordshire gave us a thousand towards the building grant, and then they voted £350. But there are very many stoppages for various exhibitions and scholarships and such like things, that the amount we actually received was a fluctuating amount. It was always £50, but it got up to £100. They have lately reduced the amount of scholarship deduction, and the last two years it has averaged £200.

5551. And these scholarships are held by the Staffordshire boys?—Yes, at the college.

5552. And you have a farm?—We have a farm at the college. There are 180 acres, the property of the college, and there are 50 acres of hired land.

5553. And the buildings are the property of the college?—Yes.

5554. And are students resident at the College?—Yes, we have over 30 at the present time; we have accommodation for 50; it was built with the idea of accommodating 50.

5555. You say that when the institution was founded, you had no other institution which could be a guide to your Trustees and the Charity Commissioners also were unable to help?—We called on the Charity Commissioners to ask them for assistance. They responded by telling us that they looked to us as the experts in the matter, and hoped we should give them assistance. Before the scheme was carried out we had an inspection made of Holmes Chapel, Uckfield and Dauntsey, West Lavington. Holmes Chapel was founded, I think, in 1895, two years after the will was proved, Uckfield in 1894, one year after the will was proved. I do not know when West Lavington was founded, but it was not quite the same sort of school. So that, at the time the will was proved, I do not know of any similar institution in England.

5556. And the farmers at that time were they rather opposed to the foundation?—They were scoffers. And, I think, the same happened in other parts, too, because in the report of Uckfield, there they complained that the farmers, and not only the farmers, but a good many of the Governors, were scoffers as to the good it would do.

5557. But their view has quite changed?—Quite changed round, about our college.

5558. Is the farm visited by farmers?—Yes, by a great many.

5559. Do you conduct any experiments?—In conjunction with the County Council we have carried on external experiments in Staffordshire and Shropshire; but the last two years the Shropshire experiments have been carried on entirely at the expense of the college. Up till then—I mean this year and last year they had been carried on at the entire expense of the college; previous to that the out-of-pocket expenses were borne by Shropshire. The out-of-pocket expenses are still borne by Staffordshire. We work as a joint board in the matter, and the report is issued concurrently.

5560. Are any lectures given in the counties?—Yes, the County Councils really are the lecturing body, but some of the lectures are provided by members of our staff.

5561. Are they well attended?—Extremely well attended and the attendance is increasing, and the demand for the lectures from various centres is also increasing.

5562. And that is a cause of recoupment of students for the schools?—We hope so. It brings us into touch with the counties generally.

5563. Then the fees charged and the number of students—can you give us any information on these points?—The fees charged for the scholastic part are £8 a year, and for the boarding part £35 a year. I may say that the fees have been put extremely low because, from what I have read of the will, I think you will gather it was intended to meet the requirements of people of limited means, and in drawing up the scheme we kept that in view, and kept the fees low in the hopes of attracting people of the class the testator desired.

5564. And those with scholarships paid no fees?—Well, of course the scholarship money does not pass through our hands. We receive for the scholars who have gained scholarships exactly the same amount as for the others. We don't pay that: the County Council pay it direct.

5565. And the salaries of your staff, Colonel Burne?—The salaries of the staff are low, I think. I am not perhaps

able to give the exact sums—Mr. Foulkes can give that; but they are too low for us either to get the best men or to retain the services of young men when we get them. I might mention in this connection that when we first started we engaged a dairyman at £65 a year, but he had not been with us very long before he got an appointment under the Irish Agricultural Department at £200 a year. We appointed a successor at the same salary, £65, and we increased him gradually up to £80 a year. He left us after about three years' service to go to Cirencester, where he received £100 a year, all found. Our next man we had to take on at the price we finished with the last, £80 a year. He only stayed with us three months, and he took a more lucrative post at Aspatria. Our present man we have engaged at £90 a year. That would prove that we are not paying sufficient salaries to keep a dairyman, at any rate.

5566. And does that apply to other members of the staff?—Yes, I think so.

5567. Can you tell us what the staff is?—There is the Principal, there is a mathematical and land surveying man, there is a chemist, there is the practical man, the farm steward and his assistant, there is the botanist, and there is the veterinary lecturer; there is also a lecturer in bee-keeping and gardening.

5568. Is there any instruction given in book-keeping?—Yes, the mathematical man gives instruction in book-keeping.

5569. And you want more money?—We want more money. The work has not been curtailed as to what we have undertaken. I think we have carried out fully all the work we have undertaken, but we are in difficulties and if we had more funds we could do more.

5570. You could give more adequate salaries to your staff?—We could get better men on our staff, and I think our chemistry department wants strengthening. We are refusing work in the laboratories which might be of great service, both scholastically and to the outside public. We are absolutely refusing work.

5571. I suppose the farmers consult you?—They are very fond of consulting us, but Mr. Foulkes can give you the particulars with regard to that better than I can. They are very fond of consulting us privately for advice without going to the trouble and notoriety of calling into operation the Act of Parliament, and I should think on the whole it is a very good thing they can do so.

5572. They would rather come to you than go to the analyst?—A good many of them, and they would do so more if they had the chance. We don't pretend to take any cases that are going into court to be tried. We give private information, but if they want to go into court they must take the Act of Parliament and put that into force.

5573. (By Lord Barnard.) Could you give us any more information as to the origin of the college? Can you tell us who Mr. Harper-Adams was?—Well, I suppose you would call him a yeoman landowner. He owned three properties—one at Edgmond, one at Woodseaves, near Market Drayton, and the other he got from his brother, at Chadwell, in Staffordshire.

5574. Can you tell us at all what led him to make this magnificent foundation?—No, I don't think I can. I have heard that he said that he got all his money out of the land, and he thought the best he could do was to leave it back to the land.

5575. Are you aware whether he took any interest in scientific agricultural education? Was he a good farmer himself?—Anything but; at one time, however, he greatly improved the present College farm by the use of bone manure.

5576. That's very odd?—It is most extraordinary, and the land he farmed was in a very queer state latterly.

5577. The will was dated in 1891, and the testator died in 1892. What did the trustees do in 1892? Did they go to the Charity Commissioners and apply for a scheme?—We did not apply for a scheme as a matter of fact until the Charity Commissioners had put before us a scheme we could accept. We had a free hand, and we thought we had better keep it until we were satisfied the Charity Commissioners would do something we approved of.

5578. I don't quite understand how the Charity Commissioners came in?—Well, eventually we did apply for a scheme. We started, first of all, to realise the estate, and we had a lawsuit over it. A niece put in a caveat

Col. S. T. H.
Burne.
4 June, 1907.

Col. S. T. H.
Burne.
4 June, 1907.

against the will, and we settled that by paying her £12,000, I think it was. Of course that was done through the Probate Court.

5579. You were one of the original trustees?—Yes, I was one of the original executors and trustees.

5580. You have told us that you still have an invested capital of the nominal value of £26,000 or thereabouts; can you tell us what is the income which you now derive from that endowment?—About £800 a year.

5581. Then really the foundation has provided land, buildings and an income of £800 a year?—That is what it stands at now. The farm previous to being taken over was let at £319 gross rent a year.

5582. You have only recently started the college. When was it opened?—In 1901.

5583. Then I suppose I might say, in your opinion the institution is even now more or less in an experimental stage?—Certainly.

5584. I mean it is still developing?—Yes.

5585. The County Councils of Shropshire and Staffordshire have only recently had the whole question under their consideration, and the subject is not yet settled?—The Salop County Council have approached the Staffordshire County Council, and they have got the Staffordshire County Council to somewhat increase their grant, and they at the same time have cut their own down from £800 to £350, and the only good point that I can see about it is I understand that there is a joint advisory committee going to be appointed between the two counties—it may be good or bad, it depends what they do.

5586. The matter cannot be regarded as completely settled?—I don't think so.

5587. Are you a member of the County Council?—No.

5588. Are you in any way under the jurisdiction or control or guidance of the County Council?—Not in the slightest.

5589. Do they have any representatives on the governing body?—Yes, each county has two representatives. They have them under the scheme, and further, when they made grants to it we accepted additional representatives under some Act of Parliament.

5590. That is the Technical Instruction Act?—Yes.

5591. Then I see the University has a representative, and the Royal Agricultural Society?—Yes.

5592. And the Petty Sessional Justices of Newport?—Yes.

5593. Does your body regard the work as satisfactory?—Yes.

5594. You are satisfied with the constitution?—Oh, yes.

5595. And you have power to select other members?—Yes.

5596. Do you make any report to the County Council? I suppose their own members report?—No, we are not bound to make any report. I suppose their own members report.

5597. Do you issue a balance-sheet every year?—Yes, and statements of accounts. It is laid down under the scheme. It is, practically, the stereotyped scheme of the Charity Commissioners; Clause 19, I think it is.

5598. You have to return those accounts to the Board of Agriculture?—Certainly; if we don't have to, we do it.

5599. Do you think that there would be any objection to your being placed under the guidance. I'll call it, of the County Council, that is to say, if the County Council should be induced to provide for and control this sort of instruction?—You see, this property was left to establish a school or schools of agriculture in Salop or elsewhere in England; the money was not only given for Shropshire and Staffordshire. You must always remember that.

5600. But assuming that the subject of higher agricultural instruction generally was to be more organised, would you have any objection to the County Councils—I put it generally—all over the country being entrusted with duties and having greater power in connection with the subject?—No, certainly not, speaking broadly. So far as this Institution is concerned I should be quite prepared to consider any well-considered scheme for handing over the College, practically, to a Committee, provided that the County Council's Committee would guarantee the balance of the cost at the finish, and sufficient precautions were taken on that Committee to watch the interest of the original trust.

5601. What I gathered from the information you gave

the Chairman is that the County Councils are carrying on a certain amount of work side by side with the College?—Yes, especially Staffordshire.

5602. And would you agree with me that it might be desirable that it should all be centred in one Institution under the guidance of the County Council so that there should be no overlapping?—Yes. I don't think there is any overlapping, as a matter of fact, because we have worked in harmony with the County Council.

5603. Then with regard to a central control—you receive a grant from the Board of Agriculture?—Yes.

5604. But beyond sending a report every year, they don't interfere with you although they are willing to give you assistance and guidance?—They send down their inspector, and we have the benefit of his advice.

5605. And you consider that satisfactory. Do you welcome his visits?—Oh, certainly.

5606. And obtain advantage?—When we were in difficulties Mr. Brooke-Hunt was very useful to us, indeed.

5607. (*By the Chairman.*) Are there any farmers on the Governing Body?—Yes, the Magistrates, at the last meeting, appointed a tenant farmer, pure and simple, and there are several others. One of the County Councillors is a tenant farmer, pure and simple; and those that are not tenant farmers, pure and simple, are almost all landowners farming themselves.

5608. (*By Mr. Latham.*) Prior to this will, what were the County Councils of Staffordshire and Shropshire doing with regard to education? How were they spending their "whisky money"?—There were some lectures. But, off-hand, I should say they were doing very little, from 1902. I forget what date the "whisky money" was granted.

5609. Then until this College came into existence there was little done?—Very little. I forget the date on which the "whisky money" was voted, but, I do not think, it was when the will was proved; I do not think it was in existence then.

5610. Did you take up their scheme?—We did not take up their scheme, and Shropshire considered this a perfect "godsend" to their county. When they were in difficulty as to how to deal with agricultural education, this dropped down in their midst, and they greeted it as an excellent means of spending their "whisky money" on agriculture.

5611. They were spending much more money before you began?—I do not think they were spending more before we began; I think they were spending less. They had spent very little money on agricultural education until this came into existence, then they began to spend by giving us £800 a year. But now they are decreasing it to £350.

5612. Have they given you any reason why they have decreased it?—They have not, except that they have brought Staffordshire into line with them, which means that they have come into line with Staffordshire.

5613. Then the two counties are considerable gainers by this will?—I should say so. Oh, most decidedly, the benefits are very great.

5614. You made the remark that you visited two or three educational centres, and West Lavington was not up to what you do?—West Lavington was a school—I didn't go there myself—it was a school for young boys.

5615. You didn't find fault with it?—Oh, no. It was more elementary than what we proposed—that was what I meant.

5616. You spoke of the farmers being against you and inclined to ridicule you, was it at lectures, or at the idea of the College, or what was their idea?—Well, they doubted whether the scientific people could teach the practical people. They thought the scientific man was no good on the farm, and that what they wanted was a practical man; and to a great extent, I agree with them.

5617. I agree with them very much indeed. At the same time, do you think the combination of the two is beneficial to agriculture?—That they did not grasp, but I think they have grasped it now.

5618. Do you find the larger farmers or the smaller take advantage of the College?—The larger, on the whole.

5619. Now what advantage do you offer to the smaller man? Perhaps I had better ask my next question before you answer. There are certain fees, I take it, which you charge the larger man with residence; do you take any of the smaller men without residence at smaller fees?—The fee without residence is £8 a year.

5620. And for how many weeks is that?—For three terms of twelve weeks—36 weeks.

5621. And what is the fee for the larger man?—Oh, it is the same, the boarding fee is £35 a year if they live in the College, plus the £8, that is £43 a year.

5622. What does the shorter course include?—The shorter course is an eight weeks' course for farmers' sons, but Mr. Foulkes can tell you better about that.

5623. Have you any outside visitors to the College?—In the summer we have a large number. I have several times been there to meet visitors, and we have had 80 to 100 at a time.

5624. What class of man is that?—Chiefly farmers from all parts of the counties.

5625. Do they come to see experimental work?—They come chiefly to see experimental work; they take the greatest interest in that.

5626. What lectures do you give to the outside public?—We give lectures on behalf of the County Council in horticulture through the botanist, and in veterinary science.

5627. Are your veterinary lectures well attended?—Very well attended.

5628. I see the veterinary lectures are given by a member of the College; is there any feeling against that sort of thing? Do the veterinary people feel you are going too far?—I have not heard of anything; it has not reached me if there is any such feeling. In engaging a veterinary surgeon we tied him down not to practise. He was not to practise privately, so as not to compete with the local veterinary surgeon in that way. He was to devote himself exclusively to lectures. I never heard that the local veterinary surgeons objected to the lectures.

5629. I take it he was a man from outside?—Yes; when we first started we employed a local man, but we found a local man was called off occasionally. He could not give the time; he had to work at his own profession and could not always attend.

5630. Do you go in for horse-shoeing?—We have a blacksmith one day a week, and the residents all have to go through a course of shoeing. I do not know whether they become very proficient or not, but still they could take a shoe off or put one on at a pinch.

5631. Have you given agricultural lectures at the different centres on market days?—No: we have only given lectures at the College open to the public.

5632. But you have not been to the several centres and given lectures to the farmers on market days?—No.

5633. You have no invitation from the farmers to go outside?—No, not in the sense of lectures. We have had invitations from the show societies to put up a tent and give demonstrations in various subjects.

5634. If these farmers' clubs, which I know there are in Staffordshire and Shropshire, were to make application to you to give them lectures at the ordinary market, would you feel disposed to do it?—I should think undoubtedly we could undertake them.

5635. Don't you think that would rather endear you to the farmers?—At present Stafford have their own agricultural lecturer, therefore any agricultural lecture in Staffordshire would be from him.

5636. He does not come from you?—He does not come from us. He comes from the County Council to us; he lectures at the College.

5637. Is he certified by you as an efficient lecturer, or is he picked up by you?—I think he is very good, and he has the ear of the farmers all round. He brings them to the College.

5638. What dairy work have you done?—We keep a dairy and teach all sorts of butter and cheese making.

5639. I think you said you had a little trouble over your instructor wanting too much money—have you tried a lady?—We had one temporarily.

5640. Wouldn't she come for a great deal less money?—I think not. But we thought there were certain objections to having a lady instructor there always.

5641. Did the County Council offer scholarships available at your College?—Yes.

5642. At what value?—I think the highest Staffordshire scholarships are £45 or £50.

5643. And Shropshire?—I think £35.

5644. What length of term does that give?—Two years, with occasional extensions to three.

5645. Can you tell us what your two years' course is?—I think Mr. Foulkes will do that better than I can. *Col. S. T. H. Burne.*

5646. I see you give mechanical teaching—how far does that go?—It does not go very far. What we want to teach them is to be able to put a self-binder together.

5647. I quite agree with that. It is more showing them how to take implements to pieces and put them together than it is actual mechanical work?—Yes, we have a mechanic, a fitter and a lathe, and the student gets a smattering of that sort.

5648. Then you really do keep a tradesman's shop?—Yes.

5649. Do you go in for research work at all?—Not very much. We consider education is our line, not research.

5650. What are the principal experiments that you go in for?—The principal experiments are seed-growing and manurial experiments—experiments on varieties of seeds and experiments with manures.

5651. You say a great change has come over the general practice of the farmers in the district?—The educational work is appreciated.

5652. What proportion have you of farmers' sons in comparison with other tradesmen's sons?—Mr. Foulkes has the actual figures. I have not the figures, but I believe more than half the attendance is by actual farmers' sons.

5653. Can you tell us at all whether the education that you give to these farmers' sons is appreciated and that they return to the land, or that it lifts them out of their sphere and they go into other occupations?—According to the Principal's returns, so far as he knows, 142 out of 183 have gone on to some sort of work on the land, either agency or farming at home or abroad—a very large proportion.

5654. I was just going to ask that question with regard to valuers and land agents—do they take advantage of your College?—The returns show that 14 have become land agents and teachers.

5655. Do any of them go abroad and take advantage of foreign agriculture?—Twenty-nine appear to have gone abroad.

5656. (By Mr. Medd.) What is the exact income from the endowment?—Last year it was £836.

5657. Then you hand the whole of the income over for the benefit of the College?—Yes.

5658. What is the exact character of your own property? You own the buildings?—Yes, all the land north of the road is our own property, and south of the road is hired land. (Referring to plan of farm.)

5659. I suppose it is not mortgaged in any way?—No; freehold.

5660. And no heavy outstanding liabilities?—None whatever.

5661. And I understood you to say to Lord Barnard that you would have no objection to co-operating, generally, with the County Council of Shropshire—possibly the County Council of Shropshire would become responsible for the whole of the agricultural education?—I said I should have no objection to considering a scheme. I should have certain objections to handing it over offhand.

5662. Exactly. You wouldn't transfer the trust in any way to them or the management of the trust?—I should say not.

5663. I may explain what I mean. There are in all counties large gaps between the elementary schools and Institutions like yours, and such an Institution as yours, in co-operation with the local authority, might fill those gaps much more efficiently than if you worked independently of each other?—I do not think the majority of the students at the Agricultural College come from the elementary schools, so that I do not think we should be filling that gap.

5664. No, you would not; but then you would be the collegiate centre to which the best and most select of the pupils would come?—We can be that now.

5665. But there are intervening grades, unfortunately?—I don't quite follow. But I hope the idea is not to reduce us down.

5666. No, it is to make you the head to which all aim. At present, in Shropshire and elsewhere, you have nothing in the nature of intermediate agricultural education?—They started a school at Cleobury Mortimer.

5667. But that has an agricultural side to an ordinary secondary school?—Yes, but it is a sort of intermediate grade.

Col. S. T. H. Burne.
4 June, 1907.

Col. S. T. H.
Burne.
4 June, 1907.

5668. It is a sort of technical school with a smattering of agriculture added on. Have you any connection with agricultural education in Shropshire otherwise than through your connection with the Harper-Adams College?—No.

5669. Have you any ideas as to the types of school and forms of instruction that should be offered to labourers? As a practical man, yourself, what would you suggest?—That is a difficult thing to say.

5670. There are certain suggestions, and of course, one wants to hear the opinion of the man who is practically familiar with the agricultural conditions of a particular area?—Well, occasionally, the County Council have had such a small thing as hedge-laying, just a temporary class, which, no doubt, if they can get a good instructor, is valuable.

5671. But what one feels is that such institutions as yours cater solely for the upper class and the larger farmer, and that since you exist in Shropshire your influence and so on might be used to promote a definite system from the elementary school upwards in varying grades suitable to each grade. You have it in your power to stimulate work of that kind?—Yes, to a certain extent. But I don't think you must leave the higher grade.

5672. I should not touch that; but we don't want to leave all the intervening stages alone—the labourer and the small farmer?—No doubt you have the fees of other institutions there, but I do not know of any institution which quite takes students at the same fees as we do.

5673. It would not affect the character of your Institution *qua* Institution. What I suggest would merely be your definitely co-operating with the Local Authority to systematise every grade of agricultural education within your area. I notice one point, that hitherto you have not taken any steps to provide classes for the training of elementary school teachers?—Oh, yes we have.

5674. I am very glad. It is not down here in this Report?—It is not annual. I won't say what we have done; it has been the County Council. When the County

Council wished to have a class of that sort it takes place at the Harper-Adams.

5675. You have never had them continually on Saturdays throughout the year?—No, we have never had that.

5676. That is a point you might consider, perhaps. It has been done at other institutions and has been found to be of the very greatest benefit to the teaching of the locality?—Certainly.

5677. (By Mr. David Davies.) Your staff in the College don't give lectures outside?—Yes, at the expense of the counties.

5678. Is there anything in the nature of evening classes for labourers and farmers' sons?—These lectures do take place in the evening. Some of the horticultural lectures must be in the form of demonstrations and take place in the day. But the lectures given by the veterinary man are always evening lectures.

5679. And they are open to the general public?—Yes.

5680. Then are there any scholarships awarded by the County Council to farmers' sons?—Yes, both counties award scholarships, and Worcestershire is also sending scholars to the College.

5681. Is there an examination before these scholarships are awarded?—Yes, there is. Staffordshire conduct their own examinations, and, I believe, Shropshire do them through the College—the Principal conducts the examinations.

5682. (By Lord Barnard). There are two points which occur to me in connection with the management of the Institution; have you a clerk?—We have a paid clerk.

5683. Does the management of the Institution cost much?—We pay him £50 a year.

5684. Are the whole of the stocks and securities, which are referred to in the schedule of the scheme, in the names of the official trustees?—Yes.

5685. Then you have the great advantage of receiving the dividends free of income tax without any expense whatever in the way of collection? They are regularly paid to your bankers?—That is so.

Mr. PERCY HEDWORTH FOULKES, B.Sc.Edin., F.E.S., called and examined.

Mr. P. H.
Foulkes.

5686. (By the Chairman.) You are Principal of the Harper-Adams Agricultural College, Newport?—Yes.

5687. And formerly you were lecturer in agriculture at the University College, Reading, and science lecturer at the British Dairy Institute?—Yes.

5688. Now you can give the Committee some information with regard to the various courses of study?—I went to the Harper-Adams College as the First Principal with no definite lines laid down to work upon and therefore our courses at first were experimental, and we have gradually worked up into two definite courses as we found instruction was required by those coming to the college. We have practically two classes of students: the farmer's son who has had little or no previous education in scientific subjects, who has passed through an ordinary small Grammar School, has a smattering of mathematics but little or no knowledge of botany, geology or chemistry, and therefore it has been necessary to provide for such students an elementary course in subjects like chemistry, botany, geology before they could take up purely agricultural subjects; for such students our Certificate course is suitable. The second class of student that has come to the College has been more the student who wishes to go in for Land Agency work, or who has had a fairly good education and wants to go in for agriculture. We have had young fellows from most of the public schools who have had a good education and done some science beforehand, and who, therefore, want a different course of instruction from the farmer's son, and we provide for them a Diploma Course on the lines of the National Diploma as conducted by the Joint Board of the Royal Agricultural Society and the Highland Society. Our Diploma Course forms a preparation for the National Diploma. We hold examinations at the end of the session and we award the Diploma to those who pass the examinations which are conducted by external examiners, and frequently our students who are taking the College Diploma go in for the National Diploma. Then in addition to these two Courses, the Certificate and Diploma, we have as a rule in the spring term, that is January to March, a

short course in agriculture for farmers' sons who are unable to leave home for more than a short time. I think I may say that those courses have been fairly satisfactory as they have been taken up by young men of just the type we want to get hold of, young fellows from 20 to 26, who are living at home or on a farm and who come to us with a good knowledge of practical work and who know little or nothing of the theory of agriculture. We have also for those who have taken the short course, what we call an advanced short course, that is extending over sixteen weeks, eight weeks before Christmas and eight after, during the time of the year when a boy can be best spared from home. Those practically are the courses of instruction which we now have built up.

5689. Do I understand that you have one course which takes eight weeks, and which is practical?—Yes.

5690. And that there is another course of sixteen weeks, eight before Christmas and eight after, which is somewhat more advanced but also essentially practical?—That is so.

5691. And what is your opinion of the National Diploma examination?—My opinion of the National Diploma is that it is rather too theoretical and not sufficiently practical; many of the subjects are treated from the theoretical side rather than from the practical.

5692. You say all your students succeeded in obtaining it?—Yes, that is to say our students this year.

5693. (By Lord Moreton.) I think you have been successful in previous years?—We have.

5694. (By the Chairman.) Then the preparation of the students who come for the Diploma Course is good, but the preparation for Certificate work is not so good?—That is so. It takes really a good deal of time to ground the student in the Certificate Course before he can really do the work in the Diploma Course.

5695. Do they come direct from the Elementary School?—No, I should hardly say so. We have had a few direct from the Elementary School, but the majority come from Grammar Schools.

5688b

5696. Is the number of Secondary Schools in the counties of Shropshire and Staffordshire sufficient?—No; I think the general opinion in Shropshire is that there are not sufficient Secondary Schools. There has been a great deal of discussion during the last two or three years on this very point, that there are not now sufficient schools.

5697. And in Staffordshire?—Staffordshire is better provided for.

5698. Then the number of students taken in the College is on the increase?—We have had, I think I may say, a steady increase of students since our commencement up to this session. Our total number has been about 224.

5699. Most of the students are resident during the winter terms?—Yes. We have a larger number because of the short course students, that is those who come to the eight weeks' or the 16 weeks' courses.

5700. You also have a certain number of Certificate and Diploma students?—Yes. They are taking the two years' course.

5701. Are most of them resident?—The majority are resident. We have only three or four non-resident.

5702. And of the short course students the majority are non-resident?—No, they are resident for eight weeks.

5703. And those who take sixteen weeks?—Yes. It is not necessary they should be resident, but most of them come from distances and it would be inconvenient for them to live at home.

5704. No inconvenience to the diploma and certificate students arises from giving those students accommodation?—No; we have had no difficulty up to the present, because our accommodation has not been fully made use of.

5705. But if there is further increase of diploma and certificate students then you would give them the preference?—We should be bound to.

5706. Then who attends during the summer term. Are they chiefly the diploma and certificate students?—Yes, those who are taking the complete course.

5707. And are there any women?—No. During the vacations we have had special classes, or lent our dairy for the travelling dairy schools, but we have not provided definite courses for women.

5708. Is the travelling dairy school under your supervision or under the Council's?—It is under the Radbrook School which is a Girls' technical school. We do the examining. We have had a sort of general connection with the school and we do the examining.

5709. Then I see you have another class of students who spend six months at College after leaving school before starting for the colonies in the spring?—They take the certificate course as a rule.

5710. But they only come six months?—We do not cater for them especially. But perhaps a boy is leaving school and going out to the colonies and he wants to put in the winter months at the College before going abroad.

5711. And does he get a certificate?—No.

5712. But he takes the first part of the certificate course?—Yes.

5713. Then a large proportion of your students are the sons of farmers or landowners or connected with land, and the minority are the sons of business men and professional men?—That is so.

5714. And do the schoolmasters take the certificate course?—They take the nature-study course. We have provided two nature-study courses in our vacations. These vacation courses are held in the years we have our long vacation, which is alternate years.

5715. And the elementary teachers, you have had certain courses for them at the request of the County Council?—Those are the nature-study students.

5716. Only in nature-study?—Yes.

5717. You mentioned that the great drawback is the fact that the farmer will not spare his son for a sufficient length of time?—That is what we have had to contend with most in Shropshire. A farmer wishes to have his son at home as soon as he possibly can after leaving school, and he can thereby not only save a labourer, but his son can be trusted where a hired servant could not be trusted, and it means a considerable saving to the farmer himself. That has been put to me over and over again by farmers whom I have met in the county.

5718. It makes it difficult for them to take advantage of the scholarship?—Yes.

5719. The students who reside in the College work on the farm?—That is so. We arrange our time table so that a portion of every day is devoted to some branch of farm work. We divide the students into divisions so that they may rotate through the different branches of work on the farm—the dairy, the cattle, the workshops and the actual outside farm work.

5720. Do you do any breeding of cattle?—Yes, we breed cattle, so far as our accommodation will permit.

5721. Have you any sheep?—Yes, we keep about 100 breeding ewes, and also fatten off stores purchased each year.

5722. And pigs?—Yes, we keep a couple of breeding sows, and purchase stores for fattening as well.

5723. There is no forestry department?—No, we give no forestry instruction, and I think the class of student we have had does not require forestry, except we have had half a dozen students who rather aimed at land agency work. We have not the staff, neither have we the means of giving instruction in forestry. We have about two acres under horticultural work, and we have an acre under fruit trees, and the students take part in that work.

5724. You also give some instruction in veterinary science?—Yes, we do a great deal of veterinary work. We are almost an exception in that respect. We keep a veterinary surgeon entirely for our own work, and we are able to utilise his services very fully indeed.

5725. Then the field experimental work, that was commenced in 1902, and you have increased it each year, and the interest shown by farmers in that work is steadily increasing?—Yes, we started in 1902 really at the request of the Staffordshire Farmers' Association, who sent a deputation to the College. Since then we have developed on other lines of work they have asked us to carry out. That has been taken advantage of by the farmers very largely indeed in Shropshire, and the same men come year after year, and that, I think, is a proof that they do appreciate what they see, otherwise I don't think they would give up their time at a busy season and spend a whole day on the farm. Variety trials have proved extremely popular.

5726. And as a result the enquiries for seed have been considerable?—Yes, each year we have had a considerable demand for seed from our plots. Over £200 worth of seed has been sold off the farm in a season to farmers in the counties after their visits to the College.

5727. You say "parties of farmers are organised by different agricultural societies," so that you have more than one?—We have a number of small societies scattered over Shropshire and Staffordshire, and those societies organise parties; they come and bear the whole cost of their visit and spend the whole of the day on the farm. Then we have a number of landowners—Lord Barnard is one—by whom parties of tenants are organised and come to the College and spend the day with us.

5728. And I see that the Shropshire Chamber of Agriculture paid you a visit last August, and then adopted a resolution?—Yes. I thought that might be of interest to you as showing what the Chamber of Agriculture thought of what they saw. That was the second occasion on which the Chamber visited the College.

5729. Perhaps you will give the Committee the terms of the resolution?—The resolution was:—

"That this gathering of the Shropshire Chamber of Agriculture, consisting of something like 100 landowners, land agents and farmers, in visiting the Harper-Adams College for a second year heartily appreciates the work which is being done to assist the farmers of Shropshire by carrying on experiments, etc., which visitors are able to see on visiting the College; and that a copy of this resolution be sent to the Salop and Stafford County Councils, and to the Board of Agriculture, in view of the support which they give to the College."

5730. Then you also carry out field trials in Shropshire and Staffordshire?—We carry out the work in Shropshire entirely, but in Staffordshire we work in conjunction with the agricultural instructor, as before our College was started he had been carrying on experiments at a number of centres. It was thought we might co-operate, and we jointly plan out the experiments at the College and he carries them out in the county.

5731. And on these field trials you disseminate bulletins and complete reports?—Yes.

5732. And you circulate those free amongst the farmers?—Yes, in the two counties.

Mr. P. H.
Foulkes.
4 June, 1907.

Mr. P. H.
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5733. And you find, I suppose, they are very eager to get them?—Yes, this year we have had more enquiries for copies of the reports than we have ever had before. The Staffordshire County Council sent out about 1,500 from the County Office, and we distribute them in Shropshire, and anyone who enquires for them can have them free.

5734. Then in 1902 an arrangement was made between the Shropshire and Staffordshire County Councils and the College for delivering county lectures by the staff in veterinary science and horticulture?—Yes, that was an arrangement started in 1902, because in Shropshire they had no lecturer in veterinary science, but they had had a lecturer in horticulture, and the Technical Instruction Committee, then in existence, thought it would be desirable to work in conjunction with the College, and since then our staff has been engaged in this work.

5735. That applies to Shropshire?—Yes, and to Staffordshire in respect to veterinary work. In horticulture the County Council have had a lecturer of their own for a number of years, long before the College was started.

5736. And in Staffordshire there is an agricultural instructor, and he gives the lectures?—Yes, he gives agricultural lectures.

5737. But in Shropshire there is no agricultural instructor?—No.

5738. So there are no lectures?—I, myself, have given a few at some of the societies. I might say I greatly regret that there is no lecturer, because the agricultural lecturer can do, perhaps, more good than the veterinary or horticultural lecturer in bringing the College into touch with the farmer.

5739. Then at the request of the Staffordshire Farmers' Association a seed-testing station was opened?—Yes, that was done in 1903.

5740. Was that opened at your College?—Yes; it is purely college work.

5741. I believe, at the request of the Board of Agriculture, in 1905, arrangements were made for testing milk?—Yes. That was in accordance with the scheme drawn up by the Board to enable farmers in the various counties to get their analyses done at a nominal fee.

5742. And your students, I suppose, also take a share in that work?—Well, they do analyses on their own account; but we do not allow them to touch any samples that come in for testing.

5743. They see it done—I mean as to the experience, and its educational value?—They see it done, oh, yes; and in the same way in regard to analyses in the laboratory, they see the work.

5744. Are your laboratories sufficient?—Yes, our laboratory is sufficient as regards size, but I am sorry to say it lacks equipment. We have no gas, for instance, and that has been a great drawback to our doing, what I may call, first class analytical work.

5745. You'd like more money?—Yes. It is what our Governors have considered for the last three or four years—the instalment of the gas; we have not been able to see our way to do it.

5746. Then analyses are carried out at the request of farmers?—Yes, we have enquiries from farmers who will not go to the trouble of carrying out the details required under the Fertilizers and Feeding Stuffs Acts. They come to us and bring samples and say they would like to know whether they are on the safe side, but they will not take the samples in the proper way and have witnesses; but for their own satisfaction they want to have an analysis made.

5747. But you cannot always accept their invitation?—We refuse a large number of samples because we have only one chemist, and he has a good deal of teaching work to do.

5748. So that you think your College ought to receive more support in order that that work may be efficiently carried out?—I certainly think we could do much more if we had the means.

5749. The staff ought to be increased with a view to the performance of this part of the work?—Yes, I think so.

5750. Then you are also asked for the identification of pests and diseases?—Yes, we have numerous enquiries from farmers as to diseases, questions of manure, use of feeding stuffs, etc.

5751. And you give them such help as your means will allow?—Yes.

5752. Then for the benefit of the small agricultural

societies in Shropshire, the College staff has given demonstrations at the shows in butter-making, soft cheese-making, poultry dressing, and also horticultural demonstrations?—Yes, we have done a little in Staffordshire as well, although the work has principally been in Shropshire. In Staffordshire they have their own travelling dairy school, and their instructress at the principal shows has given demonstrations, so that work has not come through us.

5753. I suppose you are well pleased with the fact that the County Council have now appointed a Joint Committee. You expect that will be a benefit to the College?—I think it will be the means of bringing us into more intimate contact with the two County Councils. We have been rather looked upon as a separate organization. Although you will see that we have representatives of both County Councils, still we have not been in that close touch with the County Councils that, I think, is desirable in an institution of this sort.

5754. And the result generally is that the farmers show a steady increased interest in your welfare, and during last year you received visits from 600 farmers?—Yes, that is the largest number of visitors we have had.

5755. And those who have made a visit once repeat their visit another year?—Yes.

5756. Showing that they have benefited by their visit?—I think so.

5757. (*By Lord Barnard.*) This Institution differs somewhat from a great many of these institutions established elsewhere in consequence of the fact that it has not been established by the public at the public expense, but it is what is technically known as a charity?—Yes.

5758. And, naturally, subject to certain trusts, so that your operations are practically limited by the trusts of the scheme and can only be altered in conformity with the law affecting the trusts?—That is so.

5759. One of the conditions, I believe, of this scheme is that no student shall be admitted under the age of 14—have you any students as young as that?—We have not, because the Governors, after the College was started, raised the age limit to 15. But as a matter of fact the average age is between 18 and 20.

5760. I heard you say something about young men over 20 coming to attend short courses?—We have had students over 30.

5761. Have the Governors fixed an age for leaving?—No.

5762. Take a certificate course, for instance, what age do they come?—About 17, but we have had younger pupils than that.

5763. Do they come direct from the secondary schools?—Sometimes, and sometimes after having been on a farm.

5764. I should like to know what your view is with regard to a farmer's son attending your college, on two points: one is whether you think that it is best he should have a good general education, or should he have had any preliminary training in special subjects?—I think the good general education serves a young fellow much better than a specialised one.

5765. You wouldn't have them taught any special subjects?—No, we can do it better.

5766. The other point is, do you think that these young men should come to you immediately on leaving school, or do you think it is advisable that after leaving school the boy should spend a year or two helping the farmer?—Well, so much depends on the individual. Speaking broadly, I'd rather a student came to us after he had been on a farm. But the drawback is when a young fellow of 17 has been at home for two years he has lost touch with his books.

5767. Particularly in mathematics and science?—Yes.

5768. Then I see the object of the founder is practically carried out, except in one direction, and that is a very important one. The scheme gives no effect to the founder's intention to educate women, I don't know why?—I think that may be answered by the fact that Shropshire has an institution intended purely for women and girls at Radbrook, near Shrewsbury. It was founded under the Preston Hospital scheme.

5769. The object of the foundation is to teach practical and theoretical agriculture to youths?—Quite so.

5770. You, of course, aim at educating the practical farmer very largely, but you don't exclude, I hope, many allied occupations and more particularly the teaching of the agricultural profession?—I think I may almost say some of our best students have been the sons of professional men and they have done best at farming afterwards.

5771. You are in close touch with your profession?—I think I know most of those engaged in teaching work.

5772. You will agree with me when I say at the present time there is a great demand for highly educated scientific agriculturists all over the world?—Yes. When we want a new member of staff it is sometimes very difficult to get hold of one.

5773. Colonel Burne told us that many of the staff when they show a faculty of becoming highly skilled are drawn away to other parts of the world—in fact you can scarcely keep your teachers?—That is so; and that I think is solely due to the fact that the salaries offered outside are very much higher than we can offer.

5774. Have you been associated with farming all your life?—I am the son of a land agent, and I have been brought up on a large estate.

5775. Do you go about a great deal?—I did at first, but during the last three years my time has been so fully occupied in the College that I have not been able to do so.

5776. You mentioned the importance of keeping in touch with farmers, don't you think the best way is to keep in touch with agricultural shows and address them?—Yes, and I regret that I have not been able to do more of that work myself. I have lectured at one or two meetings, but not as much as I should have liked to have done.

5776A. Of course I suppose I am right in saying that a great part of Shropshire farming is of a very first-class order?—I think there are few counties to touch it.

5777. And a great part of the agricultural district is of the ordinary mixed farming, and on the north and Cheshire side dairy farming is carried on?—There is a great deal of milk and cheese made, but more on the Cheshire side.

5778. Will you tell us what your farm is?—It is a mixed farm. We have kept it entirely mixed for teaching purposes.

5779. Do you study the special breeds of the county, Hereford cattle and Shropshire sheep, or do you extend your operations into other breeds?—We have gone into other breeds, but we have kept the Shorthorn breed as typical for milking, with representative specimens of other breeds for teaching purposes.

5780. You mentioned pigs; I think, so far as the labouring classes in the district are concerned, the pig is looked upon as of very great value and importance?—That is so, in our district particularly.

5781. You also mentioned the subject of forestry. You told us that the number of young men who went in for forestry was somewhat limited. You are aware, of course, that Bangor College has now a forestry class, therefore if a man wanted to start in forestry, it would be a pity to start a class at Harper-Adams?—Yes, I think we can do better in other directions.

5782. The point I want to bring out is this, that all these institutions should be more or less co-ordinated?—Yes.

5783. Then on the subject of veterinary work, I suppose you only teach the merest elements?—We don't attempt to make veterinary surgeons of them. We try to give them a good general knowledge of animals, such as is useful to a farmer.

5784. You are not trenching upon the province of the veterinary surgeon?—Oh no, not in any way.

5785. Have you any good farm buildings?—Very good indeed. They were finished in 1900, just before the College opened.

5786. You have also told the Committee about the analyses you make. You told us that practical farmers preferred the more informal operations which you carry out to the elaborate formalities required by the Act?—Yes.

5787. We have been told one reason why farmers go to the colleges is that they can get general information as to the result of the analysis?—It generally opens up correspondence. They want further information, and it leads to giving results of experiments that have been carried out, etc.

5788. By analysing fertilisers and feeding stuffs, you are generally extending higher agricultural knowledge?—I think so.

5789. There is only one more question I want to ask about the students. The official Report says, "In addition to these counties, students come from other counties." Are you aware whether they come by scholarship from the County Council?—I always know whether a student has a scholarship.

5790. That is to say, supposing a County Council of some other county gives a young man a scholarship and says, "You must hold this at some institution approved by us," he might select yours as well as any other?—Well, we have had instances. We have had them from Lancashire; we have now two Worcestershire scholars with us.

5791. Would you agree with me that the general line to be adopted in the case of such an institution as this should not be "locked up," but that it should form part of one general system over the whole of the country, your College should be part of the educational system of the country?—I certainly think a general system would be better than working in isolation.

5792. I see the scheme says the school is open to all boys if there is room; if there is not room preference is to be given to these who are resident in the county of Salop?—That has never come into force.

5793. I do not know whether you care to answer this question, but have gentlemen in your profession any association or means of inter-communication, such as is afforded by the Headmasters' Conference and the Conference of Masters of Secondary Schools, and the Conference of Teachers in Foreign Languages?—Yes, we have a very strong organisation, namely, the Agricultural Education Association. Formerly it consisted of the Heads of Agricultural Colleges and Departments, but now it is open to all the profession.

5794. Do most of them belong to it?—I think so with very few exceptions.

5795. By means of that Association you can get on with this co-ordination?—We do. We have annual meetings. For eighteen months I was honorary secretary of that Association, so that I know the working of it.

5796. (*By Lord Moreton.*) What size is your farm?—We have 180 acres of our own, and we have taken another 50 on a 21 years' lease.

5797. I hear you have not done anything towards teaching any labourers on the farm?—No, we have done nothing with the labourers.

5798. We have heard a good deal about the veterinary work. Has your College done anything as regards farriery?—No, beyond what we do in our own blacksmith's shop with our veterinary surgeon.

5799. Has that ground been covered by some other body?—No. I tried to get the Shropshire Committee to undertake such work, but owing to the expense they would not consider it.

5800. (*By Mr. Latham.*) I should like to ask you to give us a little more information as to how you give his private advice to farmers?—By correspondence and by visits. I mean a man will come over, or he writes. I have a few letters of enquiries here which will give you an idea of what we get. Here is a telegram: "Man made a mistake dressing wheat; put two lbs. bluestone, will it interfere with growth?" Here is another: "I shall be greatly obliged if you will kindly say what your opinion is after the experiments you have made as to the relative value of superphosphate and slag." Another letter was with regard to the identification of some barley samples.

5801. This is rather outside what you might give lectures on?—Yes. Here is one, quite an exceptional thing. A man had a field of three acres of permanent pasture badly affected with smut. That would hardly come into an ordinary lecture.

5802. (*By Dr. Somerville.*) You mean a pasture field?—Yes.

5803. (*By Mr. Latham.*) Have you had any application to give any advice on the milk standard?—From whom?

5804. From farmers?—Well, we are consulted with regard to samples sent in, but hardly to give advice as to a milk standard. Perhaps I don't quite follow what you mean.

5805. It is a very vexed question by many that the milk standard is not right, and at Reading we have taken a lot of trouble to keep a record of tests. Have the farmers in your district taken any interest in getting scientific knowledge from you as to how milk may be judged?—Oh, yes. For instance, a man will send a series of samples to us to get an idea of what the individuals of his herd are giving, and what the average of the whole herd is. We had a case close to us, near Wellington, where a man was prosecuted for selling milk below the standard. He came to us for assistance, and we sent our instructor over who took samples both night and morning, and we were satisfied that it was a case of the animals—it was "an appeal to the cow."

Mr. P. H. Foulkes.
4 June, 1907.

Mr. P. H.
Foulkes.
4 June, 1907.

5806. Were the tests of value to him?—He got “off.” That was of practical value to him.

5807. Has he improved his system since?—I have never heard that he has been prosecuted since.

5808. So far as those tests are concerned you have nothing of the sort going on?—We keep a regular record of our own cows.

5809. Not anything as regular as that form (*handing to witness test cards*)?—We send out milk test certificates of analysis in a different form to these. We have bigger variations. Only on Saturday one of the cows was giving as low as 2.5 per cent.

5810. Don't you think something of that kind is of very great value?—Yes.

5811. That is what you might term private advice to farmers?—Yes.

5812. Now could not that sort of thing be lectured on?—Very well, indeed.

5813. Speaking just now of the students you said that they were very much better if they came in an advanced state of education?—Well, instead of using the word “advanced” I would say “good general education.”

5814. Such as the ordinary farmer's sons have, or in advance of that?—No, what an average farmer's son ought to have.

5815. What the ordinary farmer's son ought to have and what he does have are two distinct questions. Which do you find they have had?—I am afraid it is not always the first.

5816. Is that because you are short of secondary schools in Shropshire?—I think, very often, it may be due to that.

5817. You spoke of the outside examiners. Have you found outside examiners a success or not?—I think a decided success. It makes our diploma of more value than if it was awarded on examinations conducted by the teacher.

5818. You have nothing to say against him?—No, because he works in conjunction with the teacher.

5819. With regard to farmers' sons you said you had them between 20 and 26 years of age, and you said as high as 30?—In exceptional cases.

5820. But what have they been doing until they get to that age that they have not thought it necessary to get scientific education before?—Well, I have a case now of a young fellow who had been at home for a good time, and when he found it was possible to take a scholarship, he came to us last autumn. He is 25, and is a farmer's son, his father having a farm of 150 acres.

5821. In looking through this description of your College, which is very interesting, I asked that question because I see you have many visitors. Are these young men who come to visit you and then think they would like some education?—Yes, in some of the cases.

5822. That is how they, presumably, first know what is going on?—It is sometimes the only means they have, because they don't read our reports.

5823. You made the remark that some of the farmers were very loth to part with their sons because they were assisting them on their farms, is that so?—That is so.

5824. And then those men can be spared when they get to the extra age to come to you?—Yes, in exceptional cases. I can hardly say that has been the rule.

• 5825. That has been the exception, not the rule?—Yes.

5826. You, perhaps, may be loth to say anything about this women's college in Shropshire. It is rather a good thing, is it not?—The Radbrook School has done very good work, indeed. Their work is more domestic than of an agricultural character. They do a certain amount of dairy work, and a member of our staff has gone from the College to give instruction.

5827. That is supported a good deal by the County Council?—That is so: by a grant and by scholarships.

5828. Yours is one of the few counties, I think, that are fortunate in having two centres—one for males and one for females?—I do not think there is any other county that has two endowed institutions of this kind.

5829. That accounts for the fact that women do not get education at your centre?—That is so.

5830. In looking through this book, I see you are showing the reaping and the different things with young men around, are they students?—Yes, under our farm steward.

5831. Are they students?—Yes, they are all students.

5832. Now a little further along you are showing hedge-making. Are they the students again?—That happens to be a group of short course students, there for eight weeks.

5833. These are young men that are taught rather the practical line than the scientific line, or is it in union?—There is a certain amount of both, but it is more of a practical character.

5834. Have you a large number of entries for that course?—We have not had very many. The number is from six to nine for each course.

5835. Referring to your teachers, who teaches this class of work?—We have a farm steward, a man who was for many years farming the adjoining farm, and was a very successful farmer. Fortunately for us he was retiring from his farm, when the College was started and we took him over.

5836. Is that Mr. Vaughan?—Yes.

5837. What sort of scientific agricultural education has he had?—He has never had any; he is a man who has read a great deal, but he has had no scientific instruction.

5838. So that he is quite a practical man?—Purely a practical man.

5839. Why I asked you that first question was that I saw in your curriculum milk testing, and I wanted to ask how far you had carried it out and whether you had carried it out on scientific lines?—Yes, we have. We keep a definite record of all animals in the herd.

5840. With regard to the feeding stuffs and manures, how far do you go?—For ourselves, do you mean?

5841. No—For outsiders? Fully.

5842. You say many of the farmers cannot take the time to go into details, but at the same time they wish to have some idea of what they are buying; do you give them a full analysis?—If they want it we give them a full analysis, but as a rule all they want is the oils, fats, and albuminoids in the case of a cake, and one or two of the constituents in the case of a manure.

5843. I suppose you simply say this is a good useful cake?—Yes, and probably work out its comparative value.

5844. Then you go on to say owing to the limited staff this work has not been made widely known. You do not court this sort of work?—We cannot, because we do not like to refuse when we are asked, but at the same time we have not the staff to undertake a great deal of it.

5845. Then if you were lucky enough to get an increased grant you would be very pleased to enlarge this side of the question?—We should.

5846. To what extent are these enquiries made upon matters relative to the farm? What enquiries do you get? You say “Enquiries from time to time are being made on matters relating to the farm”?—Enquiries relating to things we mentioned just now—manures, feeding stuffs, insect pests.

5847. With regard to food stuffs, do you feed your own cattle and give results?—Yes, we have carried out experiments, not only on our own land, but also at the request of the Staffordshire Farmers' Association.

5848. I presume you carry out experiments with manures on pasture land for sheep?—Yes, we have carried out breeding experiments, the production of early fat lambs, for instance.

5849. On certain pastures?—Not by certain manures.

5850. To what extent do you do the other?—To a considerable extent.

5851. Is it from nature or from scientific research? Are your results what you get from the land in a natural way or are they from scientific research?—I think we may say both.

5852. Can you give us any particulars as to your seed-tests, and to what extent it is carried on?—We have tested about a hundred samples a year on an average, I should think: some years more, some perhaps less.

5853. Is that to show the germinating power?—The germination and purity are the two things we aim at showing.

5854. Do you find the farmers in the counties anxious to get evidence from you on that particular subject?—

Mr. P. H.
Faulkes.

4 June, 1907.

It is varied.* In some years we have had a good deal of enquiry. Some three years ago we had a large number of samples sent in.

5855. I want to ask you to give us a very general answer to this question, that is, provided scientific education was offered more freely to farmers, on what particular lines would you advocate it. Of course you are well aware that there has been a very adverse feeling with regard to scientific teaching. Provided there is a good feeling coming round, I want to know what would be the principal good to the agriculturist of this scientific teaching?—I think by giving him facilities for obtaining more information as to the matters with which he is continually coming into contact. I mean more information as regards the use of manures, more information as to the analyses of food-stuffs, seed tests and milk tests.

5856. You think that certainly the scientific education of farmers would tend to get more value out of the soil?—I see no reason why that should not be the case. The more information he can get on the subject the better for him.

5857. Have you any experiments going on in your county with the successive growth of corn?—You mean growing year after year the same variety? None.

5858. Have you any experience yourself?—Only what I have seen at other institutions.

5859. You have never visited such a place as Mr. Prout's?—No, I have never seen his farm.

5860. (By Dr. Somerville.) Do you exact an examination fee for diploma?—No.

5861. I notice both your diploma and certificate course extends to two years?—Yes.

5862. But I also notice that a considerable number of men who are entered as certificate students are in their third year, and a very considerable number of Diploma students are in their third and fourth years?—Not a considerable number, but a student may stay three years to pass the examinations.

5863. Well, 20 per cent. in the case of the diploma, that is to say, five out of 23 in the case of the Diploma Course and five out of 20 in the case of the certificate?—Well, in the diploma course the Staffordshire County Council award their scholarships for three years, and if a student comes who is not able to take it or do the work of the first year Diploma Course he then goes into the certificate for the first year, and takes two years in the Diploma afterwards.

5864. It is not a case of "lame ducks"?—No; we have also men who are going in for the National Diploma who have to take two years for the first division.

5865. A considerable number of subjects are common to the two courses, are they not?—Yes.

5866. Are book-keeping and veterinary science, for example?—Yes.

5867. A man appears to get more agriculture who goes in for the Certificate Course than if he goes in for the Diploma Course?—Well you see he has more time.

5868. Can you tell us roughly what your proportion of passes is?—For the Diploma?

5869. For either?—I cannot offhand.

5869a. The bulk got through, I suppose?—Yes.

5870. I suppose you would persuade a man not to go in if you thought he could not get through?—Yes, we find out from the first year's course.

5871. You know the sort of experiments proposed by Agricultural Education Association, have you put that scheme in force?—Yes, we have reported upon the four years meadow land on the lines laid down; we have also carried out experiments in swedes and mangels.

5872. Do you believe in the system?—Yes, and I should like to see it developed more; there should be more co-ordination.

5873. You are well aware these schemes were prepared after very careful consideration by the men who are interested in the work, and you are also aware they have not been adopted to the extent anticipated?—Yes, I am.

5874. One more question. Do you find the farmers are taking advantage of these cheap tests for milk?—Yes, I think there is an increase in number. We only started in 1905. We had 92 up to the year ending March 31st, 1906, and in the year ending March 31st, 1907, we had 136.

5875. I suppose most of the demand for information

under this system is with regard to the mixed milk of dairies, and not so much as regards the qualities of individual cows?—It is more mixed than individual.

5876. Have you any farmers trying to weed out their poor animals and to build up a high-class milk strain?—Yes, we have two or three. One man with every animal he buys at once sends a sample to us to test.

5877. You find farmers are alive to the advantages of ascertaining what their animals are doing, and proceed to weed out and build up from the knowledge ascertained?—I think that is slowly coming in.

5878. (By Mr. Medd.) How many students have you at the present time in each of these courses?—How many are there to-day in the Diploma Course?—A much larger proportion in the Certificate Course than we have in the Diploma. I cannot give you the figures.

5879. Perhaps you will kindly send them on?—Yes.

[The witness subsequently informed the Secretary that the figures asked for were Diploma 6, Certificate 27.]

5880. Now you mention that students come to you at the age of 15 and you have some at the age of 30, in what course would these men over 20 be?—Some are in the certificate course and some are in the diploma course; they are in both.

5881. Don't you find it very difficult to classify them satisfactorily when you have them at very varying ages?—Not so much in the Diploma Course. The difficulty is in the Certificate Course, because they vary so much in previous education.

5882. Now with regard to the younger students, are they fairly well prepared when they come to you at 16?—They vary very considerably.

5883. In what are they mainly defective?—In mathematics.

5884. Have they, as a rule, done any elementary science?—Not as a rule.

5885. When they have, has it generally been satisfactorily taught?—Well, on the whole I should say "No."

5886. You probably prefer pupils coming to you having had a thoroughly good general secondary education?—Yes.

5887. Have you had any pupils from Cleobury Mortimer?—I think we have had one.

5888. Who has been through their agricultural course?—No, he has not. I think they have done very little on that side recently.

5889. Probably you wouldn't care to express any opinion as to the agricultural side?—No, I would rather not.

5890. Do your students attend Shrewsbury Market at all?—Yes, but they attend Newport regularly.

5891. Is it as good as Shrewsbury?—There are not as many animals going there.

5892. Do they sell at Newport by live weight?—No.

5893. Do the students study the market records?—Yes, and they have the information given in the regular class.

5894. Have your staff ever given lectures to farmers on market days?—No.

5895. What is your position to-day in regard to the training of teachers? Have you any current course?—No; we have not. The only time we are able to have a course of teachers is in the long vacation, and that only in alternate years, because we have an exceptional arrangement with our summer term in order that students may be on the farm during the two harvests, that is hay and corn. We divide our summer term into two divisions, and while the one year the student is with us through the hay harvest, that is up to the middle of July, in the following year he is with us to the end of August; so that it is only in alternate years we have a long vacation.

5896. I know you have had courses and they have been very satisfactory, do you think it would be possible for you to arrange a course to be held continuously on Saturday afternoons?—Not with our present staff.

5897. With regard to the remark of Lord Barnard that women students might under the will of the testator be admitted, is it not a fact that at Radbrook School they have no horticultural instruction?—That is so.

5898. All they have in the way of open air instruction is a little dairy work?—Yes, that is so.

5899. So that Radbrook does not provide in any way for the horticultural instruction of women?—Not at all. But the terms of the will were housekeeping and dairying and other subjects.

5900. Can you give a brief account of the work of the Agricultural Education Association?—Well, the work has

Mr. P. H.
Foulkes.
4 June, 1907.

consisted really in drawing up a scheme of experiments. It has also held Conferences. We have an annual meeting, and discussions take place, papers are read by members on recent research work which has been conducted by the different colleges, also papers are read on topics relating to educational matters, teaching subjects and so forth. Then visits are paid to the principal experimental stations. For instance, we had a Conference two years ago at Bedford when we visited Rothamsted and the Royal Agricultural Society's farm, and papers were read.

5901. How often does the Association meet?—Every year. We have a winter meeting and we have a Conference, which generally lasts for three days in the summer.

5902. Is that well attended?—It has been very well attended.

5903. (By Mr. Davies.) How many short course students go on after they have finished their short course? Do they proceed to take the Certificate Course?—A few take it.

5904. I suppose they have scholarships?—Yes. It is difficult for them to leave home. They come to us for a short time: the parents allow them to come in the winter months, but not in the summer months.

5905. Then a good many, with advantage, could take the Certificate Course?—A good proportion.

5906. What proportion of students in your College are awarded scholarships before they come there?—On an average about a quarter, and it is less than that sometimes. We have had it as low as a sixteenth.

5907. What proportion of these scholars come from the counties affiliated to the College?—From three-quarter's to two-thirds, I should think. I don't think we have ever had more than one-third from other counties.

5908. So that the farmers in the counties are really beginning to realise the advantage of sending their sons without scholarships?—Yes, I think so, and I think that is largely due to the fact that they do not know of the scholarships. I have had this difficulty. At some schools the headmasters are rather averse to putting the information that there are scholarships before their pupils for fear of losing them at the ordinary school age. I can give you an instance where a student came to us: his father was bailiff on an estate, and just the kind of man whose son would benefit. He was at one of the secondary schools in Shropshire, and although that school had had information that there were scholarships, it had not been put before the scholars, and it was only by chance he heard of it. I think if we could get more in touch with the secondary schools there would be a wider distribution of information.

5909. I understand there is an examination before the scholarship is awarded?—Yes.

5910. Then with regard to the practical work carried on at the farm, do you pay your students for the work they do on the farm?—No.

5911. Do you teach the history of agriculture as a part of the course?—They get a certain amount of history taught.

5912. But as such it is not an integral part of the course?—No.

5913. What is your opinion about it. Do you think it could be brought in?—I think it might for Diploma students, provided they had more time. The difficulty is in getting all the subjects taught in the two years during the time they are at College. We are obliged to confine ourselves to the actual workaday subjects.

5914. You told Lord Barnard, with regard to forestry you did not consider it advisable for you to have a professor of forestry in your College?—I don't think we should be able to give him enough work. We could devote the money to better use in other directions.

5915. What about the two counties outside? Is there not a good deal of work to be done in the way of giving advice and so on? A lecturer might go through two or three counties giving advice and the fees being paid to the College for his advice. I should think there are opportunities for a good deal of that class of work?—Well, not so much as in the counties which support the Bangor College. Shropshire is more of an agricultural county, and there is more farming than there would be afforestation. I quite agree with you that a great deal of good might be done in that direction.

5916. I mean not so much in-college work, but outside work?—Yes.

5917. You think there is scope?—For advice, certainly.

5918. With regard to your old pupils, when they leave the College, have you any organisation through which you are able to keep in touch with them?—I have done it personally, but we have no organisation. I have kept in touch with a very large number by correspondence.

5919. Do you think that is a part of the College life that might be more developed, so that you would be able to interest farmers more in the counties?—Yes, I think so, and as we go on I think we shall be able to do something.

5920. I think you told the Committee that Staffordshire has a lecturer of their own?—Yes.

5921. Is he responsible to the College?—No, he is responsible to the County Council of Staffordshire.

5922. You have no control over him?—No, except he has been made an honorary member of the staff of the College, and he comes to lecture there one day a week, so that he can be kept in touch with us.

5923. Would it be advantageous if you had some form of control over his movements, and the way in which he works?—I think perhaps, it would be better, generally for all county work to be carried out through one institution.

5924. With regard to the demonstration class, I think you told the Committee that the College had plots in different parts of Shropshire, and are these plots migratory or stationary?—They vary from one season to another, though very often we carry on at the same centre for three or four years.

5925. Do you find the landlords are willing to carry on the work free of charge?—Yes, we have had no trouble at all. We pay nothing. We find all the manures and seed, and they find the labour.

5926. Do you find the farmers come and look at the experiments when they are being conducted?—Yes, and a great deal of interest is shown.

5927. If the Board of Agriculture had more money to spend and were able to increase your grant, in what way would you spend the money?—I think the question of the salaries of the staff would be the very first thing we ought to consider, and an increase in staff would be next.

5928. So that you would really strengthen the existing staff and the existing work rather than branch out into anything fresh?—Well, we should like to do both.

Professor LLOYD MORGAN, LL.D., F.R.S., called and examined.

Professor
Lloyd Morgan

5929. (By the Chairman.) Professor Morgan, you are the Principal of University College, Bristol?—Yes.

5930. A Sub-Committee of the Faculty of Arts and Science was recently constituted to deal with the subject of Economic Biology?—That is so.

5931. Perhaps you will give the Committee its constitution?—The Sub-Committee of the Faculty of Arts and Science is composed of Professor Stanley Kent, who is Professor of Physiology; Professor Francis Francis, who is Professor of Chemistry; Professor S. H. Reynolds, who is Professor of Geology and Zoology; Professor Cowl, who is Secretary to our University Committee, that is the Committee having for its object the forwarding of the claims of

Bristol for a Charter; Mr. Priestley, who is the Lecturer in Botany, and two readers in Economic Biology, Mr. Barker, of the National Fruit and Cider Institute, and Mr. Bolton, the Curator of the Bristol Museum, with myself, *ex-officio*, as Chairman of the Faculty of Arts and Science. The Sub-Committee of the Faculty was formed so as to correlate the work which is already in progress and is in any way in touch with agricultural education, and to consider the best means for its further extension. A certain amount of work has been carried out for some little time, would you like me to indicate the nature of that work?

5932. Please—I may say that Professor Stanley Kent, the Professor of Physiology, has been consulted with regard

to certain avian tuberculosis which is prevalent apparently in Somerset. That is being dealt with by Mr. C. E. J. Walkey, Instructor in Poultry Keeping under the Somerset Agricultural Instruction Committee, but Mr. Walkey felt that he was unable to carry it out quite upon the lines of bacteriological research, and therefore called in Professor Stanley Kent to help him in that connection, and he is at present at work upon the matter, considering methods of disinfection and considering whether the disease can be transmitted to the offspring in the egg, whether the chickens are born with disease, at what age the disease first appears, and so forth. That is the work which Professor Stanley Kent is at present engaged upon. Professor Francis has been asked to give advice upon insecticides by a farmer in Somerset. I may say that the farmer is one of the past students of University College who had himself worked in the chemical laboratory and is carrying out certain observations himself and wanted more technical advice, and therefore came to Professor Francis. I may say that that partly arose out of the fact of our having this Sub-Committee. Then thirdly Mr. J. H. Priestley, Lecturer in Botany, has been carrying out experiments on the inoculation of beans with nitragin and comparing the American and German methods. He has been making trials with cyanamide checked by chemical analysis, and he has carried out investigations himself and has been in touch with investigations by others on the effects of electrical stimulation, and he has brought together the results which have been obtained in our neighbourhood and thrown them together into a paper which will be published by the Bristol Naturalist Society. The experiments of Mr. Priestley have been on a comparatively small scale; but other investigations with which he is in touch have been on a considerably larger scale. I may say that in connection with University College there is a small botanical garden of half an acre, and a nature study garden of 12½ acres at Brislington, near Bristol, and it is in this nature study garden that a certain amount of experimental work is being organised by Mr. Priestley. Then there is work in connection with others on regional surveys in Somerset and Gloucester dealing with the habitats of plants and their relation to the geological structure and surface soils. And, furthermore, there are some investigations carried on by Mr. Priestley and his students on heredity in *Trifolium*. Those investigations are only just beginning. The original work of Mr. Priestley has also been on lines which perhaps might be scarcely considered in touch with agricultural work, certain physiological researches on carbon production in plants that have been published in the proceedings of the Royal Society and which were spoken well of by the President of the Chemical Society (Professor Meldola) in his presidential address. He feels, and I confess that I feel, that such research may have quite distinct bearings upon agricultural work. It is difficult to say where research carried out in connection with such a subject as botany is going to end, and how far it is to be merely academical, and how far it is to be applied. The work to which I have drawn your attention is, shall I say, preliminary work. I don't pretend that that work goes very far, but it is work upon the lines of research, and it is work which those who are in touch with agricultural work apparently are interested in. And my own feeling very strongly is that the kind of work which we should do in the future, and to which I will allude in a few moments, should be centred in research and in the advisory work which would naturally arise out of research. Then, to go to a different point, perhaps I may mention that the Museum Committee under the Bristol Town Council are quite ready to co-operate in such work, and are forming an exhibit on economic biology at the Bristol Museum. That, again, is in its infancy, but it will be constantly in touch with the work of this Sub-Committee of the Faculty of Arts and Science, and our object is to give an opportunity to those who want it to become acquainted through these exhibits with the nature of insect pests and so forth. Well, in regard to the projected lines of development, our view is that, at any rate for the present, the work of the Department of Economic Biology should be for research and for consultative and advisory purposes, and in touch with work which is being carried out in the neighbouring counties and constantly based upon investigation and research. That is to say, our conception is that the teaching and training of agricultural students is not the work which we have immediately in contemplation. We think that that should be carried out in agricultural colleges. Not that there should be no teaching or training in connection with the work of this Department, but rather that the teaching and training which there is should be for the experts and for those who are going to be in touch with the work in the counties around. Then we hope to be in constant co-

operation with such work as is undertaken at the National Fruit and Cider Institute, and at the experimental stations in neighbouring counties. It is unnecessary for me to say anything about the work of the Cider Institute, but it seems to me that with the staff we have at the University College there ought to be opportunities for help afforded to Mr. Barker at the Cider Institute, and that Mr. Barker will also afford some facilities for us, and I think it is quite possible that among our students some may be induced to take up research work so as to aid Mr. Barker in the work he is carrying out there. It has been suggested to us that there are openings for helpful assistance in forestry, and especially it has been suggested lately, in watching fruit importation and the introduction of noxious insects. Of course there is a large amount of fruit importation at Bristol, and we understand that in some cases some noxious insects have been introduced. Then, looking to the future, we hope that, when funds permit, there should be appointed a director, possibly with the title of Professor, as head of the department, whose duty it would be to render assistance and give advice to farmers and others, and to correlate research work and its economical application. The lectures and teaching, if any, should be kept wholly subordinate to research and consultative work. I say, if any, not necessarily excluding the work of lectures and teaching from the more general point of view apart from the teaching of experts, not to exclude that, but to point to the fact that we should regard that as wholly and completely subordinate to the research work and consultative work, which, it seems to us, is the work which such a centre as the University College that hopes to be a university ought to carry out. We hope shortly—in fact, the list was placed before me only yesterday—to form an advisory committee, with representatives from the neighbouring counties, so as to aid us in directing our efforts in the direction which would be profitable to the neighbouring counties, for most assuredly it is not our wish in organising this incipient department in any sense to re-duplicate any of the work that is being carried out in our own neighbourhood, but rather to eventually form a consultative centre from which we hope may radiate some of the higher results of teaching, one of the functions of the Professor or the Director being that he should keep himself in touch with what is being done elsewhere, and thus correlate the work as a whole. I may only add that we hope ere very long to make appeal to the Privy Council for a charter for the University of Bristol, and in that appeal the needs of the prosecution of such work as I have very briefly sketched will be put forward and pressed. Those are the main lines of the small amount of work which has already been done and the views we have with regard to the development of that work.

5933. Your view is that the main object of university work in connection with agriculture should be research more than the training of the students, that the training of the students should be left to the colleges?—That is our feeling.

5934. And that at the university original research work of the highest form should be undertaken?—That is our conception.

5935. And that the results of such work should be correlated with the neighbouring counties. And I suppose you are also in favour of this research work being done at your College and at other colleges, and that the results should be compared?—Yes, ultimately.

5936. And you are aware of the schemes which have been submitted by the Board of Agriculture for the purpose?—Yes.

5937. You agree that guidance might be given as to the subjects which most require that research which you have described?—Yes.

5938. So that the whole country will benefit by that work?—Yes, that is quite our feeling.

5939. And the need of correlation is very strong?—Yes.

5940. (By Lord Barnard.) I have been somewhat startled with the views you put forward. I am associated with a college, at a considerable distance from Bristol, namely, Newcastle, where we take rather a different line. You are, of course, aware of the line adopted at Newcastle; it combines the two operations of research and instruction to students?—My point was not that that was not desirable elsewhere, but we feel that would be the way in which Bristol could be most helpful to its neighbourhood.

5941. That is what I thought possible. But I was going to ask you whether you would be good enough to inform us whether that is the view of the Governing Body

5932d

Professor
Lloyd Morgan
4 June, 1907.

5932a

5932b

5932c

Professor
Lloyd Morgan
4 June, 1907.

generally or your own private view?—I am expressing the views of the Faculty of Arts and Science rather than of the Governing Body. But I have been in touch with the Chairman of the Governing body, and I am going to bring this matter before them at their meeting to-morrow. I think I may say that substantially I am speaking for the Governing Body as well as for the Faculty.

5942. Will you tell us briefly what your College is at present and what it hopes to be?—Our College is a University College; that is to say, it is about in the same position that Liverpool and Birmingham were before their Charters were obtained. The body of work that has been done and the number of students we think justify our appeal for a Charter. At present there is only needed that which is very frequently needed in these cases, a sufficient amount of endowment.

5943. I suppose what you aim at eventually is to grant degrees, certificates and diplomas?—Yes.

5944. Is your College mainly a Bristol College, or do you anticipate that it should appeal to a wider circle?—It will be mainly a Bristol College, but we hope that it will affect the surrounding counties of Gloucester, Somerset and Wilts, at least. Of course, further west there is the college which is going up at Exeter; but at present that is not very strong.

5945. What the Committee are faced with is the state of affairs which is disclosed on that map, that is to say, there is an enormous space of ground which is not covered by any institution which is providing higher agricultural instruction. I was under the hopes that you would hold out a prospect of Bristol filling up that gap.

5946. (*Mr. Medd.*) May I make one remark, and that is from that map the Royal Agricultural College is excluded as not being subsidised by the department, and I imagine Prof. Lloyd Morgan is expressing the opinion that his department had in mind the work done at Cirencester. Cirencester trains students as you do in Newcastle, but it does not appear on the map, because it receives no Government grant.

5947. (*The witness.*) I might be allowed to say that we have in view the possible reconstruction of the College at Cirencester, and hope that there will be very close relations between that college and possibly other colleges with the university work.

5948. (*By Lord Barnard.*) In fact you have it in contemplation that you may be able to provide similar instruction and certificates and diplomas and so on as are provided by universities in other parts of the country?—Yes.

5949. Otherwise I was going to ask you whether you and those who act with you had any other scheme in your heads for covering that blank space on the map. You mentioned Exeter, but I don't think they do any agricultural work at Exeter. Practically, the whole of your work at present is distinctly on research lines, and it is your suggestion it should continue?—Yes, it is our suggestion it should continue, but we hope it will be a nucleus for much further development.

5950. Did you contemplate at all becoming an examining body in, say, agriculture?—In view of our becoming a university and therefore having the opportunity of granting degrees, the work of such a college as Cirencester should be closely in touch with the university and should send their students, I take it, to the university to obtain their degrees and their diplomas.

5951. You made a remark about the possibility of the importation of noxious insects, I suppose you are aware that the Board of Agriculture are passing a Bill through Parliament to enable that question to be dealt with at the present time?—We thought local touch with the matter might be helpful.

5952. (*By Dr. Somerville.*) One question I think could be put very appropriately to you as a man who is giving his attention largely to educational problems. You have, I suppose, in Bristol a department of engineering?—We have.

5953. Is that department in close contact and close touch with the engineering works in the West of England?—With the engineering works in the neighbourhood of Bristol, and to some extent further afield in Bath.

5954. Is the staff of the engineering department available for purposes for consultation by firms that are engaged industrially and commercially in engineering?—Comparatively little of that consultative work has been done in connection with that department, largely owing to the fact

that the staff is not large enough to justify any proportion of their time being devoted to that work.

5955. I suppose that one cannot say that a firm of engineers in difficulty with regard to some problem of construction would be able to come to your University College and command the time of any member of your staff with a view of getting them out of the difficulty?—I do not think that would be so with regard to the engineering. Of course our Professor of Engineering is in constant touch with them, but not from the point of view of business transactions.

5956. That is just the point. People ask why farmers should have all this done for them by State aid, whereas other industrial businesses have no such facilities placed at their disposal? What is the answer to this question? Why should farmers and agriculturists have such marked preferential treatment?—I think that is rather a difficult question to answer. But I take it, that the work of a University or University College should be as far as possible work which will aid all those who seek information. And I confess it seems to me that the two, the engineering firms who want assistance and the farmers throughout the country who want assistance, are not quite on the same footing.

5957. Still, they are both engaged in commercial enterprises; both, I suppose, have profit as their object, and why should the State, in the one case assist them to the goal of private profit, and in the other case not supply the machinery for taking them to this desirable end?—I take it, in some cases, at any rate, the County Committees will, perhaps, contribute something to the University centre with the object of giving facilities for those for whom they are catering to obtain this information. I think that is so in Birmingham.

5958. You do not think there is anything in the suggestion that in the one case an absolute necessity of life is the object of the business, and in the other case, possibly, objects of luxury are the object of the manufacturer?—I am afraid I have not formed a definite opinion.

5959. (*By Mr. Medd.*) Have you formed any idea as to the amount of money that you would require?—For the immediate future, I take it, that the appointment of a strong man as Director or Professor is required, and I don't think that a salary of less than £600 a year could be offered to such a man if he is to be a satisfactory man; and there should be some further provision for an assistant in the research work which I have indicated, so that I think something like a thousand a year is what will be required to put the department upon a satisfactory basis as a start.

5960. And, of course, you look for local contributions from the adjoining counties and, possibly, from Bristol itself?—We hope to obtain them, yes.

5961. And you, as a collegiate centre, of the highest grade, would co-operate with such counties as might be affiliated to you? I would like just to make it clear in regard to Lord Barnard's remark; of course, you feel that with the Agricultural College at Cirencester for the training of students that is a branch of the work which need not be undertaken by you at Bristol?—That was our feeling.

5962. And you hoped that the connection between Cirencester and yourself might be of the closest possible character?—I think so.

5963. That possibly the best students from Cirencester might come to you for purposes of research work, and that students of yours might possibly go to Cirencester if they desired experience in practical work?—That was our idea very largely in the last relation as well as the first.

5964. And in that way, if this scheme were carried out, you, as a centre with the affiliated counties, would make a similar provision for that area to the provision made by Leeds for the Ridings of Yorkshire?—I think so.

5965. And, of course, great importance is now attached to forestry; have you formed any idea yet of the particular directions in which you could aid forestry and establish a stronger claim on the public?—I am afraid I have not. That is a matter which is under consideration at present, but I am not able to speak upon it.

5966. Of course, we have, in Gloucestershire, very extensive woods, and the county is particularly adapted for the purpose of forestry education?—Yes; and we hope to be in touch with Mr. Napier Miles, who is interested in these matters. We wish to seek further information before proceeding in that matter.

5967. (*By Professor Middleton.*) Do you feel yourselves in a position to conduct original research at Bristol with the

Professor
Lloyd Morgan
4 June, 1907

existing staff ?—In certain lines we want further strengthening, on the zoological side, for instance, for the insect pests.

5968. We have here the name of Professor Francis: how many others work with Professor Francis at Chemistry? How many assistants has he in his laboratory?—He has two assistants.

5969. And are all three men engaged in teaching and demonstration at present?—Yes.

5970. So that none of them has his whole time free?—No.

5971. Have you any research students in the laboratory at present?—In chemistry, yes.

5972. That is to say, post-graduate work does go on?—Oh, yes. I don't quite know how many. I suppose, roughly, about five or six.

5973. How are you situated with regard to accommodation for those students for post-graduate work?—Not very satisfactorily. We want to increase the size of our laboratory. We have quite recently converted a room into a research laboratory, or a laboratory which is mostly for research: but one of our hopes is that we shall be able to build a new chemical department.

5974. Then with regard to Botany, is Mr. Priestley the lecturer?—Yes.

5975. Then you have no Professor?—No.

5976. In Mr. Priestley's department, how many are there in addition to himself?—Only one in addition to himself, and a student assistant.

5977. Then you mentioned, I think, that on the zoological side you require additions to the staff?—Yes, we require further strength. Of course, I have had a little to do with the side myself, but I do not feel that I should be strong as a specialist, and, unfortunately, we at present are obliged to have one Professor to cover both geology and zoology, so that he has no time for such work.

5978. So that it is in the chemistry and botany you are prepared to undertake research at the present time?—Yes.

5979. And also in physiology, perhaps?—Yes.

5980. How many have you in that department? Is it a strong department?—Well, no, it is not a strong department. There is the Professor of Physiology and two assistants, I think, and then his work is partly connected with the Professor of Pathology.

5981. (*By Mr. Davies.*) You mentioned the Cider Institute; is there any chance of your taking that up as an integral part of the work of the college?—I hope the closest possible touch will be kept between the work of the college and the work of the Cider Institute. At present I do not think that we should contemplate absorbing the Cider Institute, because I hope the Cider Institute is so strong that it would rather resent absorption in that way, but I hope there will always be the closest possible touch between them and the work of the other colleges.

5982. Your idea of development is to use the Agricultural College at Cirencester as a sort of appendage or affiliated college to the University?—Yes.

5983. What do they do there in the way of short courses for farmers' sons?—I am afraid I cannot answer that question with regard to what is being done at Cirencester. I am not sufficiently aware of the exact nature of their work. I believe there are changes in contemplation, but we shall watch any changes that take place with great interest.

5984. Is there any reason why you should not contemplate giving short courses in chemistry and biology and so on to some of the farmers at Bristol without enlarging your present staff? Why should you not be able to use the existing machinery in the way of giving a sort of short-time instruction?—That we hope to do. I think it is possible from what I said, it might be imagined that we were not going to attempt to do any lecturing. The position I wish to take is that we should not lay stress upon that as our first line. We hope next session to have a short course of lectures, probably from Mr. Barker, and we hope to organise other short courses, but that will not be our main line. We hope they will be helpful and sufficiently upon the lines of helping people to see what the research is doing, keeping in close connection with the research work, and not to have mere popular lectures, but rather lectures which will indicate the lines upon which research is going and the advantages which may come from such research work.

5985. (*By Lord Barnard.*) From what source do you

expect to get financial assistance from the adjoining counties? From private sources or from the County Councils?—We hope to get some assistance, if we can so far justify our existence, from the Education Committees.

5986. You are, perhaps, aware we have had a great deal of evidence from Education Committees of late—I do not know whether this would apply to the counties around Bristol—the whole of which point to the daily increasing difficulty under the altered circumstances of obtaining financial assistance for agricultural work from these bodies?—I am afraid that is so. I happen to be a member of the County Committee of Gloucester and Somerset, and I know how difficult it is for us to devote money for such purposes owing to the pressure which there is, and the many calls there are upon our finances. But still I thought that a small grant could probably be obtained from Gloucester and Somerset.

5987. And you think those County Councils would be prepared to make such grants, although you do not undertake any instruction work?—I am afraid I cannot say. I have had some little talk with the Directors of Education, and some little conversation with Mr. Hobhouse as chairman of the County Council of Somerset.

5988. I should like also to ask you—I have been thinking over what you said just now—whether the system of research without any extensive instruction of students, which you foreshadowed, is to apply to agriculture only, or whether you propose to apply that same system to other branches of the work of the college?—Not to other branches.

5989. To agriculture alone?—Yes.

5990. Would you give us any reason for that? I regret to say I fail to understand why what is considered necessary at Leeds and Cambridge should be considered unnecessary for the West of England—I thought, possibly, what Mr. Medd had said would have helped to clear the ground a little with regard to the other college at Cirencester. Speaking frankly, we are particularly anxious at Bristol not to make any move which could possibly be interpreted as antagonistic to any existing institution. We wish to work with these, and not to try and set up a department which would be regarded as in any sense a competing department with other existing colleges, especially at the present juncture with regard to Cirencester.

5991. And then you do not take quite the same view as they do in the Eastern Counties, where we have a University centre at Cambridge, and quite close you will see on the map three white spots, numbers 4, 5, and 10, representing other institutions. In that district they have four rate-aided institutions, and apparently the University work is not considered as interfering with them?—I rather feel that possibly Cambridge stands on a rather different footing than Bristol.

5992. Take my own district, the north; we have not felt in that case that having a University Institution only 40 or 50 miles off is a serious competition to the Newton Rigg school. You don't look at it in that light?—As I say, we are particularly anxious, in any move we make at the present time, not to be possibly interpreted as antagonistic to any existing institution.

5993. (*By the Chairman.*) You are at this moment still in a stage of development?—Yes.

5994. You are just applying for a charter?—Yes; we hope ere long to do so.

5995. And in order to obtain a charter, and in order to retain claims on the neighbourhood in which you are, you are very anxious not to tread on the toes of any existing institution; is that not your position?—Yes, partly that and apart from treading on anybody's toes we should not like to feel just at a time when Cirencester is making a definite move that we possibly come in with a counter project.

5996. And besides, as your means are limited your conviction is that what is more wanted than anything else in that district in which you are situated is research work?—That was our feeling.

5997. If it can do other work it ought not to neglect it?—That is so.

5998. But still in your present state of development that is the work you consider, with the means at your disposal, will give you the maximum of efficiency and usefulness in your neighbourhood?—That was our feeling.

5999. Now, with regard to the highest form of research, obviously your research has educational value, because, as you have already stated, you would have post-graduate students connected with the research department?—Yes.

- Professor Lloyd Morgan*
4 June, 1907.
6000. You would not refuse access to your research work by competent students?—Certainly not.
6001. You are quite prepared to receive them?—We hope to encourage such students.
6002. That would be the highest form of education?—Yes.
6003. Therefore all you meant to say when you said you considered that the teaching and training of agricultural students should be subordinate, you meant by that the preliminary stages?—Clearly.
6004. You do not mean you would not receive any number of students who would come to you with a view to being prepared thereafter for agricultural pursuits?—That is exactly the position.
6005. Now for that work I suppose you would admit that you would be fully justified in obtaining a grant from the Exchequer?—I hope so.

6006. You have at present a grant to the college?—We have.

6007. With regard to the justification for the intervention of the State, more especially with regard to agriculture, would you not admit that agriculture, being one of the main industries of the country, stands in a very special position?—Yes, it does.

6008. And besides that, whereas no one would attempt to set up as an engineer or open textile works of any kind without special knowledge, unfortunately as regards agriculture everyone considers himself competent to enter upon that business?—I am afraid that is so.

6009. And therefore it is desirable that some machinery should exist which would make people realise that agriculture is not different from all other forms of business, but that it also requires a certain amount of skill to enable it to be conducted with profit and with efficiency?—Yes.

6010. (*By the Chairman.*) We have been very much interested by your evidence, and we hope that the University of Bristol will be very successful in carrying on their operations.

THIRTEENTH DAY.

Wednesday, 5th June, 1907.

PRESENT.

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman.*)

The Lord BARNARD.

The Lord BELPER.

Lord MORETON.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor MIDDLETON, M.A., M.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. SAMUEL KIDNER, called and examined.

- Mr. S. Kidner.*
5 June, 1907.
6011. (*Chairman.*) You are a member of the County Council of Somerset?—Yes.
6012. You are a farmer?—Yes.
6013. How large is your farm?—About 300 acres.
6014. Will you give the Committee your opinion as to the kind of instruction which you think is most valuable for farmers?—After the ordinary school education, you mean?
- 6014A. Yes.—My feeling is that to an extent college-training is desirable, but at the same time a different view may be taken in our part of the country—I think chiefly from the quality of the education that has been given at our colleges—I think a certain college training is very useful to every young farmer if it is not carried to too great an extent; and I think that in the first place our young farmers should be thoroughly grounded in practical knowledge, and, if possible, it should be brought within the reach of as many young farmers as possible by having a short course at one of the colleges more in the way of giving them an interest in the work than anything they will definitely learn there. If they had, say, six months' training at one of those colleges, my experience is, and I think it would be all ours, it gives those young men an interest in that kind of work, and they read and gather knowledge and information for themselves in after life which they would not attempt if they had not had that training.
6015. You think six months is sufficient?—I do. I think it is sufficient for the young man himself, and, I think, if you limit it to six months' course you would bring it within the reach of more. I do not want to see only a few of the brighter stars picked out and the others neglected.
6016. You think it ought to be general?—Yes, as general as possible for every young man that is worth teaching.

6017. You would not give them much theory?—No, very little, indeed, just a little intelligent knowledge of the subjects, not to make them chemists, but a sufficient knowledge to enable them to understand the various things intelligently afterwards.

6018. You would then send them to college?—I should prefer a year's practical work first in between. It would be difficult, perhaps, to get them to go to a college after that, but if it could be done it would be very much better, in my opinion.

6019. Do you know the Basing School?—No.

6020. Which school are you acquainted with?—I am in a part of the country where we have not one of those institutions shewn on that map at all; we are some distance from them. We carry on our instruction more in an itinerant way at the present time.

6021. By lectures?—Yes.

6022. Are those lectures provided by the County of Somerset?—Yes.

6023. Does the County of Somerset offer any scholarships which are tenable at any of the colleges?—Yes, certain scholarships are offered which are tenable at three of the schools. There are two or three schools where they have an agricultural side to them where these boys gain scholarships.

6024. Where there is an agricultural side to the school?—Yes.

6025. You approve of that?—Yes; I think you cannot instil that knowledge into them too early to a certain extent.

6026. Do you think that an elementary school ought to

have a school garden?—They have in some cases, but I am very doubtful as to the use of it.

6027. You think the elementary school should limit itself to the teaching of elementary subjects?—Yes, I am inclined to think that is almost better.

6028. Then with regard to the teachers at the colleges, do you think it is important that they should have practical knowledge?—It is very important, but it is very difficult in these cases such as I am illustrating, but it would be a very great advantage, undoubtedly, if they had.

6029. Then you think young men fresh from college are not suited for posts as travelling teachers?—I do not; they are looked upon with a certain amount of ridicule by the practical men; and even if they have a good deal of good to teach, their general lack of practical knowledge dissipates their other teaching to a great extent.

6030. You are of opinion that the object should be to enable students to become enlightened farmers, and not chemists?—That is my view.

6031. Where colleges exist, the teaching should be general?—It should be general as much as possible, and it should not be confined to only a few scholarships.

6032. You think that the kind of instruction ought to be suitable for the sons of large as well as small farmers?—Certainly, and perhaps more particularly for small farmers, because a large farmer will always take care of himself, and if he thinks it is desirable he will send his boy somewhere to get the best instruction he can; it is the small-sized, and the medium-sized farmer that wants the most attention, probably.

6033. Are you in favour of experiments being carried out by the teachers at the colleges?—Well, there I am very doubtful; it is on too limited a scale very often to be very much good.

6034. You think men ought to be specially trained for conducting these experiments?—So far as experiments go in a small way, I rather approve of what we are doing in our county. We are carrying it to the roadside, in different parts of the county where we can get farmers to give up their land for the purpose, and we are conducting several experiments in different parts of the county, but any particular result in any year may be more or less fallacious; it wants carrying on over a number of years on a variety of soil, and under varying conditions of climate, and the more that could be co-ordinated throughout the country, the greater value it would have.

6035. So that results could be compared between different parts of the country and as between different years?—That is so.

6036. Who conducts these experiments in your county?—Our agricultural instructor, Mr. Burton.

6037. Are you in favour of having an agricultural instructor for these experiments?—Yes.

6038. Only he should be carefully and practically trained?—Yes. In fact, partly on my initiative, we are directing his energies more in the direction of carrying out these experiments and seeing that they are properly done and in taking samples for analysis. We think he is doing more good in that direction than in trying to teach practical work from his own knowledge.

6039. You think he could learn as much, probably, from the farmers as the farmers could learn from him?—Well, it has been given out that if anyone wants him on a farm, he is always at their service, but I am afraid he is very seldom applied for in that way.

6040. He has not got the full confidence of the farmers?—It may be that or it may be inertness, I am afraid to say which it is, but I think there is a good deal of the first element in it.

6041. (*By Lord Moreton.*) As you have told us, there is not so much done in your part of the world for agricultural education as happens to be done in other parts of the country?—That is so.

6042. Are your opinions founded on experience gained in the West, or are they founded on what you have observed in localities where more has been done?—I think it would be both. I am away from home a good deal, and rub shoulders with a great many people probably.

6043. You mentioned in reply to the Chairman just now that you were of opinion that it was not advisable to have school gardens. Do you think it would be advisable in those schools which are attended principally by lads who are being brought up with a view to becoming farmers that they should have a chance of getting teaching on a school farm?—If it could be properly cultivated—if part

of a moderately sized farm could be set aside and cultivated according to the very best principles and practice of agriculture, it would be very useful, undoubtedly.

6044. In other words you are in favour of practical agriculture being taught on the land, but a school garden you look upon as not perhaps coming within the regular curriculum?—That is my view of the matter; it is rather dabbling in it.

6045. A good farmer is never a good gardener, many people say?—They say not.

6046. What are the subjects that are taught in the county?—Mr. Burton is our agricultural expert. He lectures on chemistry chiefly, and the relation of chemistry to the soil, and the action it has on plant life, and he summarises the results of our experiments that we are carrying on and demonstrates them. We have also a garden expert who gives both lectures and demonstrations on gardening, and pruning, and grafting, and other things—a very good man, indeed. Then we have a poultry expert who goes round the county lecturing on poultry and the various methods of keeping them. Beyond that we have taken on the cheese school from the Bath and West of England, and that has been conducted on the same lines as it was before. We have also a butter school which is located in different parts of the county at different periods of the year, and in which instruction is given.

6047. Have you done anything in regard to veterinary science?—No, there is no veterinary science, but so far as farriery goes we have had farriery classes.

6048. Apart from farriery, you have not turned your attention at all to the teaching of veterinary science?—No, we have not.

6049. Have the farriery classes been well attended?—Yes, they have been very well attended, and they did an enormous amount of good in the county.

6050. They are well appreciated and well attended?—Yes, and, I think, we get our horses shod a great deal better than we did before we began to give those lectures.

6051. I suppose you can hardly give us an idea of the number who attended those classes?—I could not give you that. We had also competitions at our various county shows which were much appreciated. Those, were aided from our county fund.

6052. I take it you are working the farriery part of the instruction in connection with the Farriers' Company?—Yes. This year is the first time we have done that.

6053. (*By Mr. Latham.*) I was rather surprised to hear you make the remark that you thought the interest in this sort of education was very good if it did not go too far. What is the use of the interest if they do not have the education?—They will get their scientific education in after-life. It seems to me what they can learn at the college and retain through life for practical use is of comparatively small importance. We have to learn through life as we go along in the best lights of scientific knowledge, and a great many of the things we learn in our early life have to be unlearned because of the advance of scientific knowledge.

6054. The scientific side cannot be learned on the practical side?—My chief objection to it is, if you go too far on the side of scientific education you cannot go as far in numbers as you want to. A good many would go for a short course, but if they have to go for a longer period they cannot possibly afford it, and their parents in a good many cases would not be willing to let them go. I think, therefore, you would defeat your object if you tried to carry it too far. That is one reason, and I think, if you try to make chemists of them, you simply make them dabblers in it. I want to make them learners more, and as time goes on they can get their scientific knowledge by reading and observing, if they want that information.

6055. I cannot say that I agree with you. You would rather that the scientific part of agriculture should be left to the chemist and analyst rather than be given to the individual?—That is so; but they should have an elementary knowledge of it, in order to give them an intelligent interest in the teaching of science and in reading with regard to it, and in order that they may appreciate the value of it.

6056. You live in a district where dairying has been made a great deal of?—Not very much; I am not in the dairying part of Somerset.

6057. I am speaking of the West of England generally, not your particular locality?—In my county that would be so, but in West Somerset we are more on a par with Devonshire; it is more mixed farming.

Mr. S.
Kidner.

5 June, 1907.

Mr. S.
Kidner.

5 June, 1907.

6058. Has not practical and scientific instruction done a wonderful deal for the dairying interest in that district?—Undoubtedly it has. The dairy lectures have been distinctly appreciated, and have undoubtedly done a great deal of good.

6059. Do you consider, if these other lectures could be carried on in the same way, with practice and science combined, they would do a great deal of good in the district?—If you could get an absolutely sound practical man with scientific knowledge at the same time, and if we knew where to find him and how to pay him, it would undoubtedly do a great deal of good.

6060. Do you not think, with this scientific education, it is possible for a man to catch hold of a good deal of practical together with the scientific education?—Yes, but it is a very dangerous method, and they are very likely to make mistakes unless they have a thorough knowledge.

6061. That has not been so in the dairy interest?—No, that has not been so in the dairy interest, but you see there they are absolutely practical, and carry out the practical work themselves, and they also teach them the science and they demonstrate themselves.

6062. Do you agree that the Bath and West have always done a great deal for that industry?—Undoubtedly so. We have always appreciated that in our county, and I have not included that in my strictures, so far as they may be called strictures.

6063. Your shoeing lectures and so on have done a great deal of good?—Yes, simply because they are given by a practical man who can go and shoe a horse better than any of his pupils, and can tell them why he ought to be so shod.

6064. Do not you consider the Farriers' Company is composed of a great many scientific men?—Undoubtedly, and their lectures in conjunction with a practical demonstrator are undoubtedly very useful; but I daresay, if any of those men who are teaching science at the same time tried to teach their pupils to shoe a horse without being able to turn it out of hand well, they would make a muddle of the whole thing.

6065. You think the practical side must come before the scientific?—Certainly.

6066. But you have no objection to their being done together, if they are done properly?—Certainly not—if by a competent teacher.

6067. Have you any secondary schools that have agricultural sides?—Yes, and they are appreciated so far as we have these scholarships in our county, and I am inclined to think that the little teaching that is given there is always useful. Some things are taught which are of absolute definite importance, such as land surveying, and things of that kind they get taught, which in ordinary schools would be neglected.

6068. Are those scholarships which are given by your County Council restricted to practical agriculture, or is science introduced as well?—Yes, it is introduced, so much so that we send our instructor there on occasion; he is associated with it to a certain extent.

6069. You seem to say that your agricultural instructor is not exactly the sort of man you want?—I do not mean to say he is not quite as good as the rest of his class, but the question is whether any of these men who have never been practical farmers themselves, and have not made a success as farmers, will ever lecture successfully to young farmers on the practical side of agriculture.

6070. Is what you term the ridicule of the farmers caused by the fact that the instructor is largely inclined to teach practical agriculture, or is it that he is inclined to teach scientific agriculture?—My feeling is that if a man is not thoroughly versed in the practical part he had better leave that part alone altogether.

6071. He cannot do the two?—I do not say it is impossible, but I cannot pitch on the man who would be available as often as we should like him.

6072. If you could pitch on the man, what then?—We should welcome him.

6073. You are perfectly aware that in many ways scientific research is of great benefit to agriculture?—Yes.

6074. A benefit which undoubtedly must come from the scientific side?—Yes.

6075. These large farmers that you spoke of, who you say take care of themselves and their sons, do they make any great effort to see that their sons are taught the scientific side of agriculture?—I think so.

6076. The agriculturist at the present day, the large man as you call him, does feel that science is essential to good farming?—Yes. I can tell you of cases in my own district where parents have sent their sons away to these colleges where they are intended for farmers ultimately.

6077. Can you tell us what happens when they come back?—I have not had that experience yet, because they are still there. I know several of them that have gone, and I could tell you better after they come back.

6078. With regard to the small farmer, it is impossible for him, possibly because he has not the means, and possibly because he has not the intelligence, to get his sons instructed in science at all. Are you against those young men getting short courses at colleges?—No, those are just the men I want. On two different occasions I have instituted lectures by our experts at Milverton, my village, and there has been a very good attendance, but mostly of the older men, and I have asked one: "Where is your nephew; he ought to be here; it is no good you learning this at your time of life"; and to another I have said: "Where is your son; why is he not here?" and so on. There was generally an entire absence of the younger men at these lectures, but I think if you could once send them away to a college, so that they might gain an intelligent interest in work of the sort, if there was a lecture of that kind given they would be among the first to attend.

6079. In the epitome of your evidence you say: "College teaching has erred by giving too much theory and laboratory work. The object should be to enable the students to become enlightened farmers, not chemists." What do you mean by that?—I mean if you send them to a college like Cirencester, where the last year, I am told, is almost entirely devoted to the laboratory in order to enable them to pass their examinations, you simply make them dabbles in chemistry all their lives instead of practical farmers.

6080. You do not think that could be altered by raising the college?—I think by altering the status of it? I do not quite know what you mean by raising it. Perhaps if you told a chemist that you wanted to go into the more practical side, he would say you were retrograding.

6081. Is there any objection that a farmer should know anything of chemistry?—No, certainly not, but I think there might be in some minds, if you placed the first importance on that, and I know perfectly well that the most successful farmer is the man who gives his greatest intelligence to the cultivation of the soil, knows exactly when to till his land, when to put in his crop, and what crop to put in. He cannot do that by chemistry, but he may be aided a very great deal by chemistry if he knows what manures to use for a particular soil and so on. He probably by his own hard experience has learned that, but if he can be aided intelligently to know why he uses such manures, and why he grows such crops, it would be useful to him, but I do not want that to supersede his practical knowledge.

6082. With regard to his practical knowledge, I dare say you are aware that there is a vast deal of money thrown away by the abuse, rather than the use, of artificial manures?—Undoubtedly.

6083. Would not it be better that a young man should have some scientific knowledge so that that should not happen?—Undoubtedly. I can give you an instance in that respect of the use of lime. Some years ago I took an off farm. I had been fully experimenting with lime on my farm, but it did no good, and I said it might do good here, and I will just lime a spot, and I put one lime dressing down; but I was never able to see any result whatever. A year or two after, my neighbour on an adjoining farm took it into his head that his farm wanted liming. He limed the whole of his arable land. I tried to get him to leave a spot so that he could compare the result and see whether it did any good or not, but I could not get him to do it. He was very obstinate. No amount of teaching would teach that kind of man, you know.

6084. You know very well of late years the Royal Agricultural Society have had an educational exhibit at their shows, showing specimens of soils that had become tainted, and exposing the mistakes farmers were likely to make, and also the mistakes that had been made by using artificial manures that ought not have been used. Do not you think that is a very useful work?—Yes, that is very useful indeed, and is just the sort of thing I want young farmers to learn and study themselves in the light of advanced knowledge as time goes on.

6085. If lectures could be given on those specific lines, would not they be of great educational value in the farmers' interest?—They would if you could get them to attend,

but my difficulty has been to get the young farmers to come. If by an easy course he could gain a scholarship, he would go to the college, because he would not be throwing away so much money. You want some particular inducement of that kind to make him begin

6086. We have had it stated in this room by a very practical man indeed, that if the individual will not go to the college, the instruction ought to be brought to the individual. What you say to that?—Well, that is better; but as I say, even if you bring it to them you cannot get them to attend. They might be flogged and made to attend these lectures, but I think if they had a scholarship which they had earned in the way I suggest they would take advantage of it; and once you give them a start in it I think there would not be the same difficulty in getting them to come afterwards.

6087. You have seen in this exhibition shed at the shows which I spoke to you about, how very seriously the soil has been affected by too much artificial manure and too much manuring of a wrong description?—Yes.

6088. Do you think that is the sort of thing which might be profitably shown to farmers?—Undoubtedly. Of course we are told now that lime used to excess, although very useful up to a certain extent, brings dry rot in roots. In my particular farm, before my father came there 60 years ago it used to be limed every year and I have never seen lime do any good on it from that time to this, and when I was a boy I know I used to have to haul out great lots of swedes that had got dry rot; but now it has been dropped we never get one.

6089. If you look at that map, you will agree there is very little educational work given in your part of the world except by the Bath and West.—No, I cannot quite agree to that, because we do a great deal of work through our County Council. We have an agricultural expert and a fruit expert who goes about lecturing. We have a poultry expert who goes about lecturing. We are carrying on a cheese school and we are carrying on a butter and a farriery school.

6090. That is practical teaching; I am speaking of scientific teaching.—Practical and scientific.

6091. Do not you live in a district where the land is very good and the use of artificial manures is not of the same value as in other districts?—It is very good, but it does very little without artificial manures.

6092. Using, as your district does, a large quantity of artificial manures, do not you think it is necessary that they should have the scientific knowledge to know how to apply them?—Yes.

6093. How can they find that out unless they have scientific instruction?—I do not think there is very much difficulty of that kind. We get papers and demonstrations published by Dr. Voelcker and by Dr. Bernard Dyer, and our Royal "Journal." There are plenty of sources from which they can gather it if they want to.

6094. Yet, at the same time, you go to the agricultural show and you see the results of land that has been injured by the application of wrong manures, and yet you would not give the young men instruction which would enable them to prevent that?—Undoubtedly, that is so; but, as you know, all the scientific teaching is more to set people on their guard than anything else. You can never know how it will turn out until you experiment. My idea is only to teach them sufficient to know how and what to experiment with themselves.

6095. You know that almost in a small field the same manure is not beneficial in different parts of it?—That is so.

6096. Is not that important from an educational point of view, and should not they be taught that?—Yes, but you know as well as I do, for instance, if you take basic slag, that no scientific man can tell you where it will act, and where it will not; he can tell you where it will probably act. A young farmer should put on one bag, say, the first year, and if it brings good results he can go ahead and experiment further.

6097. I suppose, taking agriculture, it is doubtful whether you can get general knowledge absolutely certain?—I am certain you cannot.

6098. The agricultural industry in that respect is very different from any other profession?—Yes.

6099. You can help it on?—Yes; you can say what will probably be right, but it would be very dangerous to say that the results will be absolutely right.

6100. Do you know there is a large farm attached to Cirencester?—Yes. I am told the pupil at Cirencester

spends nearly the whole of his last year's course in the laboratory in order to pass his examination. I was told that only the other day by somebody who had been there. You do not want to make them dabbles in chemistry.

6101. Do not you know that an agriculturist can get good practical knowledge by seeing what is going on on the farm there?—Undoubtedly he can, but in a case of that sort, I think, one part of the farm should be set apart from the experimental part of the farm, and that there should be somebody to farm that part according to absolutely the best principles on which agriculture should be carried out in general practice.

6102. From your remarks you would almost lead this Committee to feel that the farmer in charge of that farm is not a practical farmer?—No, not at all. It was more given me on the ground that to pass their examination necessary to gain a diploma they had to devote so much time to chemistry that they could not carry on very much practical work.

6103. Have you ever been an examiner at Cirencester?—No.

6104. You have never been there?—No, I have never been to the college.

6105. What you know about Cirencester is merely hearsay evidence?—That is so. I have seen a good many who have come from there.

6106. You have never seen any who have come from there turn out really good agriculturists?—No, I never have.

6107. I daresay you feel that plant life is a very necessary thing to us as agriculturists?—Yes.

6108. And that there is a very great deal that can be done by science to teach us in that respect?—Undoubtedly.

6109. Is not that a good thing again for agriculture? Is that to be learned by the ordinary farmer without scientific teaching?—With regard to the manuring of plants, and so on?

6110. Yes.—There again we know what manure certain plants want, and what they do not want, but we do not know *how much* they want without experimenting.

6111. Experiments mean science again?—Yes, until you have arrived at exact results.

6112. Now with regard to the taints that are given to dairy produce in certain feeding grounds of the country, do not you think agricultural science has done a good deal there?—Yes.

6113. Certain men have lost almost all their cheeses in some years because they have had an extraordinary taint in their dairy. I do not think the ordinary practical man would find out the cause of that himself?—No, that is where the scientific man could take charge of it and then when they have gathered those results, I want the practical man to learn from them. I do not want the practical farmer to become a dabbler in chemistry.

6114. I know you are a very busy man outside your agricultural occupation, but supposing you had not been such a busy man, do not you think you would have found time, if you had had the scientific knowledge in research, to make these experiments for yourself?—I do not know what I might have done in other circumstances.

6115. I think, from your evidence, you consider that science does a great deal for agriculture if it is not pushed beyond the practical side?—That is so.

6116. (*By Lord Moreton.*) Can you tell us what agricultural colleges you have had any practical experience of?—Not of any.

6117. You have not been over any?—I went over Wye College last year when I was down at the Show.

6118. (*By Lord Belper.*) I understand from what you have said that from your experience of colleges the teaching is not of a practical nature?—That is so.

6119. Although you approve of a six months' course which is probably sufficient in many cases for the ordinary student, do you think that anybody who wanted to qualify himself for the higher positions such as a teacher in a college where they give higher instruction in agriculture, could learn all that was wanted to be learnt in six months?—Certainly not.

6120. A much longer course would be necessary?—Undoubtedly.

6121. I wanted to make that clear?—Undoubtedly, that would be so.

6122. (*By Mr. Medd.*) Are you a member of the Somerset Agricultural Instruction Committee?—I am.

Mr. S.
Kidner.

5 June, 1907.

Mr. S.
Kidner.

5 June, 1907.

6123. I see you spend as much as £2,656 a year on agricultural instruction?—Yes.

6124. I gather from your evidence that you think that might be more wisely expended if your efforts were a little more concentrated on practical work and less on lectures?—No, I do not know that I can say so much as that, because a great deal of it is practical. We are not going to the extreme in the teaching of science. I am bound to say, if you ask me whether Mr. Burton can teach practical knowledge to advantage, that I do not think he can, but he can lecture to it scientifically. Then we have our poultry expert; he is practical and he can demonstrate, and, as I say, there is our fruit instructor, who gives demonstrations and shows them how to graft and prune, and so on, and we have the village gardens which he superintends.

6125. You used to have an experimental station, did you not?—We did.

6126. Why did you give that up?—In the first place it may perhaps have been useful under other conditions, but, as you know, county councils are not all composed of practical men, and on county councils, as in other cases, you find a great many men who, although they know a little about it, think they can teach agriculturists everything. I am afraid that was something of the case in the selection of this farm. It was selected in an altogether unsuitable spot to be of any use to the County of Somerset. The farm was unsuitable even if we wanted an experimental farm.

6127. You now carry on your experiments on a number of different farms?—Yes, that was carried out on my suggestion.

6128. You refer more in your evidence to instruction for the sons of small or medium-sized farmers?—That is so.

6129. You want instruction different in type from that provided at Cirencester and the advanced colleges?—That is so—a little more general and elementary.

6130. And more practical?—Yes.

6131. Have you seen any institution in England or abroad where such instruction is given?—No, I have not.

6132. You indicate the type of school which is most popular and useful in Ireland and in Holland. You want one for the small farmers who can go there for six months?—Yes.

6133. At what age would you suggest they should go?—My feeling is if they left school at the age of 15 or 16, which those boys would, I should like to see them have a year on their father's farm, or on somebody else's farm, and then go and, if possible, get a little rubbing up in scientific knowledge.

6134. You feel that that grade of agricultural instruction is neglected in England?—I am afraid it is.

6135. It is one of the most essential things for the purpose you have indicated, and you would like the Board of Agriculture to recommend proper provision for that grade?—I should say so.

6136. In fact, you think if permanent institutions where practical instruction for six months could be provided were instituted it would be welcomed by these small farmers?—I do. I think there might be a certain amount of

criticism in the first place—I should not like to say it would be received with open arms in the first instance—but so far as my enlightenment goes it would be justified and welcomed after a while.

6137. What really would be useful could only be determined by experience?—That is so.

6138. Do you not think that Somerset might, in co-operation with one or two adjoining counties, establish and maintain an institution of that grade?—It has always been my feeling that such an institution would be desirable.

6139. In regard to the agricultural sides of secondary schools, I think as a matter of fact you have none in Somerset now. The expression agricultural side is technical. You gave it up at Wellington, did you not?—I do not know—have we given it up? I am not absolutely certain now. I think there are two or three pupils there now, and they still have a school garden there, I fancy.

6140. You have three excellent schools where the instruction is all directed to rural objects—Shepton Mallet and Blackford, and there is a third I forget the name of now?—Yes.

6141. Have you visited any of these schools?—I have not.

6142. I had the privilege of distributing the prizes at the Blackford School last autumn, and it is a most excellent one. That is a school where the whole instruction is directed towards rural objects and studies, but with no agricultural side—no teaching of farming?—No.

6143. You agree that the art of farming cannot be taught at a secondary school?—I agree undoubtedly.

6144. You send some of your scholars to Reading?—Yes.

6145. Have you been able to judge of the effect of the instruction that they receive there?—No, I do not think it has been done long enough; but if any pupil who has gained a scholarship wants to go to another place, so far as we are able, we let him.

6146. (*By Lord Barnard.*) From what I have heard you say I gather that your criticism against higher agricultural instruction is limited to men who are going to undertake practical farming, and does not extend to such instruction of a higher character as may be necessary for agricultural chemists and analysts and teachers of agricultural science?—I am only speaking of future agriculturists.

6147. You would not say it was unnecessary for many other allied professions, such as manure merchants and seed merchants, and perhaps hop growers?—No. If a man is going to carry on one of those professions it is absolutely necessary that he should have all the technical knowledge, and be able to take a diploma in it, of course.

6148. That applies to land agents and surveyors and a great many other professions?—Yes.

6149. (*By the Chairman.*) I understand you to say that you think there are three schools with an agricultural side in your county?—Yes, where agricultural training is carried on.

6150. Were those the schools that Mr. Medd alluded to?—Yes.

6151. I just wanted to make that clear.—Quite so.

Mr. EDWARD BROWN, F.L.S., called and examined.

Mr. E. Brown

6152. (*By the Chairman.*) You are Assistant Director of the Agricultural Department and Lecturer in Aviculture at the University College, Reading?—Yes.

6153. You are also Secretary of the National Poultry Organisation Society, and Honorary Secretary of the National Poultry Conferences, 1899 and 1907?—Yes.

6154. Perhaps you will give the Committee some information with regard to the history and development of poultry instruction in Britain?—I have prepared a statement here which I suppose I had better read and submit to you?

6155a 6155. If you please:—Prior to 1891 no attempt had been made for the giving of systematic instruction in poultry keeping, either at agricultural colleges or in the rural districts. A few farmers' clubs and poultry societies had arranged lectures, generally, however, at rare intervals and dealing with the subject broadly. Two courses of lectures were given in connection with South Kensington at

in the early eighties, but they were in London; and did not awaken much interest. I gave three courses in 1889, 1890 and 1891 at the Munster Dairy Institute, Cork—the first, I believe, at a recognised agricultural institution.

In 1891 what is known as the "whisky money" was allotted to County Councils by Parliament, affording an opportunity of taking instruction to the people. In February, 1892, I became Lecturer in Poultry-keeping to the Northumberland County Council, the first county to take up systematic teaching on this subject. Shortly afterwards I gave similar series in Kent and Hampshire. From 1892 to 1900 my time was largely devoted to lecturing in different parts of the country, inclusive of the following 17 counties: England—Berks, Bucks, Cumberland, Essex, Hants, Hunts, Isle of Ely, Kent, Lancashire, Lincoln, Middlesex, Northumberland, Worcester and Yorks; Scotland—Berwickshire, Lanark and Roxburgh. In addition to Reading named below, I also lectured at the Edinburgh University, Eastern Counties Dairy Institute at

Ipswich, and Uckfield College, and during the period named I delivered nearly 1,400 lectures. Other lecturers took up the work, and by 1900 most of the English counties had permanent or partial instructors in poultry-keeping.

6155c From the first it was evident that peripatetic lectures, whilst necessary and most important in order to reach the great majority of farmers and cottagers, but which did not include practical training, would require to be supplemented by advanced teaching. As a rule the courses comprised two to five lectures. In 1893 a commencement was made by the holding of a three weeks' practical and theoretical course, the first in this country, at Whittlesea, in the Isle of Ely, which was followed by similar classes of from one to three weeks in Kent, Hants, and Lincoln, and a course for dairy teachers arranged by the Board of Agriculture at the Leeds College. In addition, demonstrations were introduced as a feature of village lecture courses, and in some cases practical classes for teaching the dressing and trussing of poultry.

6155d *University College, Reading.*—One of the great difficulties presenting itself to County Councils was the securing of duly qualified lecturers and instructors, knowing something of agricultural conditions, having a general and practical acquaintance with the various branches of aviculture, and capable of imparting their knowledge. To that end it became pressing important that provision should be made for fuller courses of instruction, designed with the object of meeting the requirements of teachers and of managers of poultry establishments on a larger scale than had been common up to that period, but which were already making their way. At the suggestion of Mr. A. E. Brooke-Hunt, of the Board of Agriculture, I became connected in 1894 with what was then the University Extension College, Reading, where an agricultural department had recently been formed. In November of that year this work was inaugurated by a special course of 15 lectures, and in the spring term of 1895 a short course was provided for in-college agricultural students.

6155e In September, 1896 was commenced the series of short courses which have been continued up to the present time, and of which 25 have been held. At first these occupied three weeks, afterwards increased to four weeks, and in 1900 further extended to five weeks, at which they remain. But as demand is now for longer training these are giving way to courses of 10 weeks, with an additional period of practical training.

6155f In connection with these courses, in addition to giving the lectures, I took upon myself personally the entire responsibility of providing assistance, houses, appliances, birds, etc., my remuneration being derived from the fees paid, less a percentage, for which the College provided accommodation, printing, etc. This arrangement continued with modifications until 1903, such modifications being due to the extension of the courses in 1900, when part of the lectures were given by other members of the staff, and consequently I received a smaller proportion of the fees.

6155g During the session 1899-1900 arrangements were made for in-college lectures to agricultural students, and have been continued up to the present time. In 1901 the terminal courses were commenced, extending over 10 weeks, of which eight have been held.

6155h Instruction in poultry keeping is now given regularly at many other Agricultural colleges and dairy institutes, varying, however, considerably in their stages of development. Among these may be specially named: Royal Agricultural College, Cirencester; South Eastern Agricultural College, Wye; The Agricultural College at Uckfield, Sussex; Eastern Counties Dairy Institute, Ipswich; Midland Agricultural College, Kingston; Bedfordshire County Farm School, Ridgmont; Harper-Adams Agricultural College, Newport, Salop; Agricultural College, Holmes Chapel; Lancashire County Farm, Hutton; Agricultural Department, Leeds University; University College of Wales, Aberystwyth; East of Scotland Agricultural College, Edinburgh; West of Scotland Agricultural College, Glasgow, etc.

6155i *College Poultry Farm, Theale.*—Whilst the avicultural teaching embraced a measure of practical training, as this was given at the Reading College it was necessarily limited, and the need for some farm where students could be prepared for the theoretical instruction, or be able to apply the knowledge gained, early became manifest. In 1897 I contributed an article to the *Journal of the Royal Agricultural Society*, describing the French Poultry School at Gambais (Seine et Oise), which I had previously visited, the first complete training centre for poultry, and advocated the founding of a similar school and

farm in this country. As there appeared no probability of the College establishing such a farm, and recognising the urgent need, I, in conjunction with my sons, commenced the College Poultry Farm, Theale, in the summer of 1898, the arrangement being that the College would send poultry students there for practical training, paying for the tuition the fees received less an agreed percentage. We undertook the financial responsibility of the farm, and until 1903 provided the entire equipment. During and since that year the College has made some of the extensions required, partly, however, for the experimental work. When the terminal course was begun in 1900 it was arranged that students should spend half their time on the farm in practical work, which arrangement has been since extended to the five weeks courses, for which *pro rata* payments are made. No payments for maintenance of the farm have been received or grants from public funds, and no student has been received except through the College.

As the farm has been run entirely as an educational establishment, the commercial possibilities have been made secondary. The result is a nett loss to September 30th, 1906, of £176 17s. No salaries for my sons or myself or interest on capital are included in these figures. In 1902-3, when a salary of £100 was granted to me apart from fees, this was devoted to payment for their services, and on the rearrangement in 1904 the amount paid then and since to me as salary has been inclusive of the work of my son or sons. So economically has the farm been conducted, due to special circumstances, that had it been worked as a branch of the College the cost of management would have entailed an additional expenditure of at least £1,500. Interest on capital would have amounted at four per cent. to £180. Thus we have devoted to education in poultry keeping, inclusive of the loss on the farm, not less a sum than £1,850.

The College Poultry Farm, Theale, consists of 7 acres devoted entirely to poultry, except that it is cropped or fed off by stock to sweeten the land, and in addition we run our birds on meadows adjoining of nearly 30 acres. The following is the equipment:

- (a) 14 permanent scratching shed houses and runs.
- (b) 14 portable houses.
- (c) 3 permanent houses for growing chickens.
- (d) 4 duck houses and runs.
- (e) House for sitting hens.
- (f) Incubator house (36ft. by 14 ft.) holding incubators for 2,000 eggs.
- (g) Plucking and trussing house (used also as lecture room).
- (h) Fattening shed.
- (i) Winter brooder house.
- (j) Carpenter's shop.
- (k) Food stores, etc.
- (l) Incubators, brooders, coops, and the usual appliances.

We usually maintain a stock of 200 breeders, and in 1906-7 hatched about 5,000 chickens and ducklings, and killed 1,500 birds. The main idea in view is to provide practical work for students.

Nature of Instruction.—The object in view has been to combine practical training with theoretical instruction. To that end the courses arranged vary in accordance with the requirements of students.

I. Short course, extending over five weeks, including Lectures at the college, and Practical Work on the College Poultry Farm, which latter can be extended. The lectures in this course include (1) Aviculture, (2) Soils, Meadows and Pastures, (3) Chemistry of Foods, and (4) Anatomy and Physiology of the Fowl, the first of which are given by myself or Mr. Will Brown, and the others by different members of the college staff.

II. Terminal course, extending over ten weeks, inclusive of Lectures and Practical Work. The lectures in this case are on the same plan as mentioned under I., with the addition of Book-keeping, but are much fuller.

III. Certificate in Aviculture, extending over 12 months, and granted to a student of the college who has:

- (a) obtained the College Diploma in Agriculture, or (2) Certificate in Agriculture, or (3) Diploma or Certificate in Dairying;

Mr. E. Brown.

5 June, 1907.

Mr. E. Brown.
5 June, 1907.

- (b) attended the full course of instruction in Agriculture held during the spring term and passed the examination held at the end of that course ;
- (c) attended three months at a poultry farm or establishment approved by the Joint Committee ; and
- (d) passed a practical examination held at the close of this period.

Agricultural Certificates granted by recognised colleges other than University College, Reading, are accepted under certain conditions.

Students engaged wholly in Practical Work devote their entire time to the various operations on the farm, inclusive of building and erection of houses, brooders and coops, etc., planning of ground, etc. Subjoined is the daily time table of Course Students :

7-8 a.m.—Feeding and cramming.

10 a.m.—Incubators.

11 a.m.—Lecture (at the college).

2-5 p.m.—Practical Work (including attention to houses and stock, incubators and sitting hens, chickens and ducklings in coops, brooders, etc., mixing and preparing foods, feeding, cramming, killing, plucking and trussing, carpentry, experimental work, surveying of land and in quantities, judging fowls, etc.)

Students are occasionally trained in selection and judging of fowls ; debates take place regularly ; and excursions are made to other farms.

6155k *Special Poultry Students.*—The following table shows the number of students who have taken Poultry Courses at Reading College and the College Poultry Farm, Theale, apart from the regular in-college agricultural students :

Session.	Attending Courses.	Pupils on Farm.	Totals.
1896-7	26	—	26
1897-8	22	—	22
1898-9	31	—	31
1899-0	32	14	46
1900-1	42	11	53
1901-2	56	5	61
1902-3	72	8	80
1903-4	59	5	64
1904-5	42	18	60
1905-6	30	8	38
1906-7	23	13	36
Totals	435	82	517

6156. The 435 include all three courses that you have referred to ?—Yes.

6157. What do you call the pupils on farm ?—Those are the pupils who come purely for practical work and do not take a theoretical course.

6158. Not even a five weeks' course ?—No ; they take no theoretical instruction at all.

6159. They come for a casual visit, you may say ?—No ; in some cases they come for three months, and in others they have taken theoretical courses at other colleges, or perhaps in a few cases they are people who have been poultry keepers for years, and other students of that kind that come for definite work.

6160. You do not consider them in-college students ?—No.

6161. They are outsiders ?—Yes, they are outside students, although all the arrangements are made by the College.

6161a Students have been received from all parts of the United Kingdom. In addition, we have had students from France, Holland, Germany, Sweden, and Russia, on the Continent of Europe ; from Canada and the United States in America ; from Natal, the Transvaal and Rhodesia in South Africa ; from New Zealand and from Ceylon. During the earlier years the majority of students came for the courses alone, but the tendency has been for these to be supplemented by practical work on the College Poultry Farm, so that the period of instruction has steadily increased. The following table gives the records for the 12 months ending March 31st, 1907 :

SHORT COURSE (five weeks) STUDENTS

No. of students 15.

7 took Course only.

1	2 weeks' practical work additional
2	4 " " " "
2	6 " " " "
1	13 " " and Terminal Course
1	13 " " " "
1	21 " " " "

—

15 Average duration of Instruction, 11.6 weeks.

6162. When you say " courses alone," does that mean purely theoretical knowledge ?—Half the day in lectures and the other half in practical work on the farm ; but that means that they were only there for five weeks.

6163. You say the tendency has been for those to be supplemented by practical work on the College Poultry Farm. Does that mean that the tendency has been to give them more practical work ?—Yes, distinctly so.

6164. In every case practical work is included in the course ?—Quite so.

Then for the Terminal Course we had eight students last year, of whom

4 took course only.

1	short course and 13 weeks' Practical Work additional
1	17 weeks' Practical Work additional
2	26 " " " "
—	
8	

Average duration of Instruction, 18.62 weeks.

PRACTICAL WORK Only.

No. of students 13.

1 took 3 weeks' instruction.

5	4 " " "
1	5 " " "
1	7 " " "
1	10 " " "
4*	13 " " "

—

13 Average duration of Instruction, 7.46 weeks.

I may say, at this point, that sometimes a county council will send their instructor or instructors for a month for special training in dressing or trussing or something they are going to lecture upon.

Total number of students, 36.

General average duration of instruction, 11.6 weeks.

Total instruction in courses, 185 weeks.

Total instruction in practical work, 233 weeks.

Grand total for year, 418 weeks.

Of the above students eight have remained for other courses at the College.

Records of students.—Of students who have taken Poultry Courses at Reading and Theale the following records are available :—

Poultry Lecturer at Royal Agricultural College.
Poultry Lecturer at S.E. Agricultural College, Wye.
Poultry Lecturer at University of Wales, Aberystwyth.
Poultry Lecturer at University of Wales, Bangor.
Poultry Instructor, Harper-Adams College.
Poultry Lecturers to 16 British County Education Committees.

Nearly all the Irish Poultry Instructresses were trained at Reading.

Five are engaged as Poultry Teachers to Scottish Agricultural Colleges.

Poultry Instructor to Ontario Department of Agriculture, Canada.

Poultry Expert to Transvaal Department of Agriculture.

Poultry Instructor, Government Agricultural School, Cape Town, South Africa.

Nearly 60 are engaged as owners or managers of poultry farms.

Two have large businesses as manufacturers of poultry appliances.

Experimental and research work.—The essential need for experimental work in respect to aviculture has been apparent for many years. This was one of the objects we had in view when establishing the College Poultry Farm. The records given below are small as compared with what

6164a

has been achieved in America, where money has been freely expended, in this direction. It has, however, been a question of cost, as research work is expensive both for equipment and time occupied. Our experiments have been conducted without any grant or payment, except that the College has printed the reports. Were the funds available much more might be done, to the great benefit of the poultry industry. Some of those carried out have involved an enormous amount of labour.

6165. It is in the direction of research that you would like to dispose of more funds?—Distinctly so.

6165a The following notes will show the extent of observations made :—

- (a) The College Poultry Farm, Theale, was the pioneer in this country of the scratching shed system of housing, now so largely adopted ;
- (b) We were the first in this country to introduce the larger brooder house system for artificial rearing of chickens ;
- (c) The Incubator House at Theale has been a model as to general arrangement and system of ventilation, which are adopted to a large extent. Its success in results has been very great (*vide* reports) ;
- (d) The six open-fronted houses erected at Theale two years ago have contributed to the solution of the problem of housing, and have been largely copied. They were among the first of the kind in this country ;
- (e) At Theale the system of dry feeding of chickens was carefully tested for three years (1900-2). The results published have led to the general adoption of this method in connection with artificial rearing, which has solved what appeared to be the chief difficulty, and has enormously increased the production of chickens.

The actual experiments made at the College Poultry Farm, Theale, are :—

- (1) 1900-2.—Dry feeding of chickens, as above.
- (2) 1903-4.—Artificial incubation ("Journal of the Board of Agriculture," June, 1904).
- (3) 1904.—Growth of chickens and cost of rearing (Report, July, 1904).
- (4) 1904.—Cost of growing pullets to a laying age (Report, September, 1904).
- (5) 1904-5.—Artificial incubation ("Journal of the Board of Agriculture," May, 1905).
- (6) 1905.—Growth of chickens and cost of rearing ("Journal of the Board of Agriculture," August, 1905).
- (7) 1906.—The rearing and feeding of turkeys (Report, January, 1906).
- (8) 1906.—Artificial incubation ("Journal of the Board of Agriculture," July, 1906).
- (9) 1906-7.—Poultry manure ("Journal of the Board of Agriculture," March, 1907).

I should like to put in as evidence copies of the various reports. (*Handing in documents.*)

At the present time five series of experiments are in progress on the College Poultry Farm, Theale, and much more is required in that direction were the equipment and staff available for the work.

6165b *Poultry instruction abroad.*—As already mentioned, the first poultry school was at Gambais, France, followed by Reading in 1894, and by the Rhode Island Agricultural College in 1896. In America great developments have taken place, but more especially in connection with agricultural colleges, of which nearly 30 have special poultry departments. In Australia, New Zealand and South Africa similar institutions are now in operation. I am personally acquainted with the following :—

Gambais (Seine et Oise), France, entirely devoted to Poultry, maintained by the French Government.

Godollo, Hungary, entirely devoted to poultry, maintained by the Hungarian Government.

Kingston, Rhode Island, U.S.A.

Storrs, Conn., U.S.A.

Cornell, New York, U.S.A.

Guelph, Canada.

The last four, which I visited in 1906, are in association with the agricultural colleges maintained by the various States at the places named, but whilst under the general control of the respective Boards of Management, have separate staff, and receive grants or appropriations. They partake of a special character, but also give poultry instruction to the ordinary agricultural students.

Barcelona, entirely devoted to poultry, maintained partly by the Spanish Government. I have not visited it, but my son did so in 1904. *Mr. E. Brown.*
5 June, 1907.

With respect to these various teaching establishments :—

Gambais (France) is well equipped, but limited in extent and largely confines its operations to breeding, hatching and rearing.

Godollo (Hungary), at the time of my visit in 1904, was on a small scale with a modest equipment.

The Canadian and United States Colleges named above specialise in some directions, but generally speaking are incompletely equipped. I was unable to visit the Maine Farm at Orono, where very fine ranges of houses have been erected. It is anticipated that the poultry section of the new Macdonald Agricultural College, at St. Anne de Bellevue, Quebec, which I also visited, will, when opened be one of the best in America. As at most of these, but not at Kingston, Rhode Island, the teaching and experimental staff are the same. I am not in a position to give any particulars as to cost of maintenance so far as educational work is concerned.

Two points may be submitted to the Committee for their consideration ;

- (1) At Gambais, Godollo, and at all the Colleges which I 6165c visited in America, no charge is made for tuition to students from the countries or states in which they are situated. As a consequence the number of students is only limited by the accommodation available. Whereas we are compelled to charge fees ranging from 15s. to 20s. per week according to the length of the Course. Such fact should be kept in view if comparisons are made of numbers attending American and English Poultry Courses. For non-State students our fees are rather the lesser.

- (2) Provision is made in America whereby 6165d students are able to obtain employment in order to pay for board and lodging, such employment being in or out of the College as the case may be. Students are willing to do anything, and do not suffer in status among their fellows. Female students are often employed by the Colleges as typists, book-keepers, and even house servants, and men as teamsters, lawn cutters, accountants, etc. Such a system affords an opportunity to many who would otherwise be debarred.

6166. Do you think that could be organised here?—I wish it could. Our great difficulty is the feeling on the part of the students, but it is one of the most striking things that I found in America, and I could give the Committee many examples that I came across in that country, because it interested me very much.

Experimental work in America.—Whilst in many respects 6166a both as to equipment of plants and the actual instruction given to poultry students at colleges in America these are capable of considerable improvement, the fullest praise can be accorded to the spirit with which experimental work is conducted. We may criticise some of the results achieved, but not the way in which research is undertaken. The federal authorities at Washington and the respective State Departments of Agriculture recognise to the fullest extent the importance of this work, and encourage it in every way possible. It is largely a question of money. In 1905 the following appropriations were made for Agricultural Experiment Stations :—

By the U.S. Department of Agriculture ..	£149,600
By the State Departments of Agriculture	£112,500
	£262,100

Nearly all the principal colleges until 1906 received £3,000 per annum each from the federal authorities for experimental work in Agriculture, but at the beginning of the present year some have had the amount increased to £6,000. Rhode Island and several others are receiving £6,000 per annum for experimental work.

6167. That £262,000 does not include what is spent for experiments in the colleges?—That is for the experimental work of the colleges.

6168. That £262,000?—Yes ; that is for the experimental work.

6169. Conducted at the colleges?—Yes ; or at special institutions.

6170. It has an educational value also?—Yes ; it is used educationally, of course.

6171. I thought the experimental stations were separate

from the college?—No; so far as I am aware, there are only two separate.

6171a In addition, in certain cases experts are sent from Washington for special research. For instance, for three years Dr. Curtice, a skilled pathologist, has been engaged in an enquiry as to what is called Blackhead (*entero hepatitis*) in turkeys, a disease which is devastating the Eastern States. The grants named are additional to those received for teaching. At Storrs College, Conn., which has had half the grant to the State (£1,500) of that amount, £200 was devoted last year to poultry experiments, which appears to be a fair proportion, though it is evidently exceeded at some stations.

Mr. E. Brown.
5 June, 1907.

It would be impossible, except at great length, to give a list of poultry experiments conducted at the various American Stations, but at Cornell, Ithaca, N.Y., when I visited the college in July, 1906, 12 distinct pieces of research work were in progress. At many others a large amount of attention is paid to poultry, notably at Kingston, Rhode Island; Stores, Conn.; Geneva, N.Y.; Morgantown, West Virginia; Logan, Utah; and Orono, Maine, in the States; and at Ottawa and Guelph in Canada. Of these Geneva and Ottawa are entirely devoted to experimental work, but the others are associated with Agricultural colleges. The bulletins containing reports are disseminated widely, and Geneva has a total of 40,751 names on its mailing list. I may say that the United States Government carry these reports free, so that, of course, that makes a good deal of difference.

6171b *Farmers' Institutes.*—One of the most valuable means of instructing farmers who are unable to attend college courses, and of disseminating the knowledge gained by experimental work, is by what are called Farmers' Institutes, and they are becoming increasingly popular both in Canada and the United States. These are arranged to be held either at one of the agricultural colleges or a convenient centre of a given district. In the former case an opportunity is afforded of inspecting the college and its various sections of farm and other work. Usually they are only for one day, but sometimes longer. Generally one branch only is dealt with. Specialists are engaged to speak, and the audience is invited to ask questions. I attended at two of these meetings last year, and about 250 persons were present at each, but I heard of cases where 1,000 had attended. One of the officials at Washington informed me that in the Southern States these Farmers' Institutes had done more to awaken interest in progressive agriculture than any other method tried. From the educational point of view, in so far as existing farmers are concerned, they are of the greatest value, and I do not doubt but that they do much to encourage farmers to send their sons and daughters to the agricultural colleges. The expense involved is chiefly for printing and payment of speakers, as visitors pay for their meals, except where hospitality is given.

6171c *Suggestions.*—With the rapidly increasing development of the poultry industry in this country, there is a growing demand for managers of poultry farms and of working poultrymen. My estimate is that the value of poultry produce in Britain in 1906 was at least £2,000,000 greater than in 1895, a large portion of which is the result of educational work. We are totally unable to meet the demand for qualified men. Many of those trained have commenced poultry farms, and this class is often a little above that required. We have touched only to a limited extent the working poultryman, as to him the fees have proved prohibitive.

6171d Scholarships granted either by the Board of Agriculture or by County Councils, not for short courses but for training over at least six months, would be most valuable. In some cases these might be open to town residents who desire to take up work in the rural districts. I have known many likely students who could not afford the fees and living. Scholarships of £40 would cover the expense of six months' training, and might be thrown open to competition. The college has offered scholarships for advanced courses, but these provide only for the fees.

6171e In my judgment a college poultry farm doing such educational work as the one under review can only fulfil its mission adequately by being placed under the control of a public body or institution. The difficulty is largely financial. We need £300 for further equipment for educational purposes.

A grant is required for maintenance. The staff is insufficient, but on the present basis cannot be extended. 6171f Two branches of poultry-keeping have never been adequately dealt with because they necessitated special

assistance which we could not provide for. If such grants were sufficient fees might be reduced, and an increase of students would probably result, or present students be able to take longer courses.

Experimental work could, and should, be greatly extended. But this is costly in time and equipment, and requires adequate financial support. Experiments necessitate qualified assistance.

An important need is the establishment of a National Diploma in Aviculture, similar to that for Agriculture and Dairying, with an independent Examining Board, to which all colleges and training centres could send their students. That would give a great impetus to advanced teaching in this subject. I have tried for years to secure such an examination, but hitherto without success, mainly by reason of the expense.

6172. What is the length of course that you consider desirable for giving the fullest teaching in poultry-keeping?—A point that I have always held forward has been that no one can succeed in poultry-keeping without knowing something of general agriculture. The basis must be the same in both cases, and it is for that reason that I, in the first place, wanted to be in association with an agricultural college, because I do not believe it can be done otherwise. I do not believe for a single moment in what is called poultry farming by itself; it must be associated with cultivation in one form or another. Consequently under those circumstances if we had students who have no experience in agriculture, then the 12 months' course is provided for them; that gives six months' training in general agriculture and six months specialisation in poultry-keeping. Where you have students who are already acquainted with agricultural methods, six months is quite sufficient if they are of an ordinary intelligent character.

6173. Where they have, as at Reading, the diploma, six months is sufficient?—Six months is sufficient from the poultry-keeping point of view.

6174. (*By Lord Barnard.*) I am not quite sure whether these various classes of students to which you have directed our attention are students of Reading College or not—for instance, the pupils on farm?—The whole of the arrangements are made by the college. We never accept a student except through the college. They are not registered as in-college students unless they take one of the courses.

6175. Then as to fees, what are the fees that the people whom you describe as pupils on farm pay?—The fee for three months is £10. and for a lesser period than that £1 per week.

6176. (*By the Chairman.*) Where do they reside?—In Theale, that is five miles from Reading.

6177. (*By Lord Barnard.*) What class of people are they—they are both sexes, are they not?—Yes, we have both sexes.

6178. What class of people are they, and do you know at all what they are going to become ultimately?—A considerable number of our students have taken up the work of teaching, either at home or abroad. In addition to that we have had only a few of what might be termed the farming section of the community. A great number of them have been men and women who have desired to start poultry establishments, or in some cases were the sons and daughters of large farmers who intended to carry out the work in association with their parents' farms, but we have never reached the working poultryman class at all.

6179. Even the pupils on the farm do not go down to the working class?—Only a very small percentage of them. Last year we had three or four of those amongst the farm pupils, who were sent there by their employers for special training in certain directions.

6180. You do undertake that kind of instruction?—Certainly.

6181. Where do they reside?—In the village. We have created the accommodation. In one year our students paid in the village £900 for their board and lodging. It is a large amount of money, and I was very surprised at it myself.

6182. To go to a more general aspect of the question, I gather from what you say that you attach very great importance to the combination of research work and instruction?—Distinctly so.

6183. Do you think they can be carried on side-by-side better than one separately in one place and another in another?—That would depend upon the nature of the research work. If it were pure scientific research,

6171g

that would not be so, but the moment that you come to what we may term experimental work then I believe that it is an absolute necessity to have the two side by side. It enables you to broaden your outlook, and to do a great deal more than you otherwise could do. In America there are two purely experimental stations. In some directions I think they have done splendid work. In other ways I take it the Agricultural Colleges with experimental stations have succeeded better.

6184. To look at it from the side of teaching itself and experimental work, do you consider it is an advantage to students that experimental work, perhaps not of a very advanced order, should be carried on by the staff of the institution to which they are affiliated?—Distinctly so.

6185. As you have touched on the question of Government aid, and that sort of thing, I suppose you would agree that any increased Government assistance would probably be accompanied by some increased measure of Government control?—It ought to be so.

6186. Have you any suggestion to make on that point?—What I hope in that connection is that with some control, say of the Board of Agriculture, we should avoid in poultry-keeping what has been a weakness in general agriculture, namely, the overlapping of experiments, and if we had a central authority that was contributing towards research work it would have the right to suggest to one college: "We want you to take up this branch," and to another college: "We want you to take up that branch." It might be found that one college could do a particular piece of work better than any other because of the peculiar local conditions.

6187. You would like the Intelligence Division of the Board of Agriculture to be extended to take up that work?—Yes—whatever department it may be.

6188. Have you heard of the suggestion to appoint a central committee consisting of representatives from the various districts to deal with that matter and the collection of the results of experiments and so on?—Yes. I think it is a most desirable thing. I may say that I spent some days in America, at Washington, interviewing the heads of the various departments there, and I found that was already in existence in the States—that they have an experimental section. I do not know whether you have had before you the *Experiment Station Record* that they publish every month.

6189. We hope to have them?—It is a most valuable thing. They have specialists, such men as Dr. Curtice, and if there is any disease that breaks out in any part of the country these are at once sent down to look after it and to enquire into it. We have nothing of that kind in England. I have been consulted myself by the Board of Agriculture when disease has broken out, but of course I could not go down and enquire into it.

6190. From your experience in the United States and Canada, is it your opinion that this Government control and subsidy is appreciated by those interested in agriculture?—I think so.

6191. Is it largely made use of?—It is a kindly control. I think they give a very great amount of liberty to the local State, only they have the records sent up regularly, and if there is anything arises that calls for their supervision, of course they use their power.

6192. From your observation do you think that the Government assistance in America is of great practical benefit?—My visit was hardly long enough to enable me to say that, but I never heard during the course of my stay there one single complaint with regard to it, and I think if there had been reason I should probably have done so.

6193. (*By Lord Belper.*) I think you agree as to the importance of poultry instruction being combined with general instruction in agriculture?—That is so.

6194. Your poultry farm is at Theale?—Yes.

6195. Do the students learn their general instruction in agriculture there?—No, the farm is at Shinfield, on the other side of Reading.

6196. Do the same students go to both?—So far as the agricultural students are concerned, they have not had anything more than lectures, and when they want poultry-keeping they come to us as a special establishment.

6197. You do not carry out to the full extent your view that they should have the opportunity of combining their agriculture with their poultry teaching?—Not in the practice, but we do in the teaching.

6198. I suppose, therefore, you would consider that the

teaching of poultry-keeping, if taught to the best advantage, could be best combined in some agricultural college where the other branches of agriculture are taught?—That has been my idea all through, and that has been my practice, except so far as the farm is concerned. We are compelled to specialise. Where you come to special teaching I do not see how you can help it.

6199. I see you have the various courses with regard to poultry teaching—what you call a short course and a terminal course. Those vary, I suppose, according to the requirements of the students as to how far they want scientific teaching in aviculture?—If I understand your question, perhaps I can answer it by saying that those students who come specially for that period devote their whole time to the poultry work, excepting that they have lectures on general agricultural subjects in the college as part of these different courses.

6200. I think you referred to research work in connection with poultry teaching. I conclude you mean rather what we should generally call experimental work?—Yes.

6201. Research work in the sense that requires scientific research; there are not so many openings in poultry keeping for that as there are perhaps in other branches of agriculture, plant growing, and so on?—I do not think there would be quite as many as in some other directions.

6202. You rather think it is an advantage to the student to see what is going on in the way of experimental work while he is learning the practical work?—Yes. We have an experiment going on at the present moment, for instance, which might be almost termed research work, on your basis—artificial incubation. That is most valuable in its results to the students; it enables them to see what they could not otherwise do, and of course in other ways as well.

6203. That, of course, must be carried on under somebody who is sufficiently scientific to ensure that the conditions are all properly fulfilled and so on?—Certainly. My son, who has charge of that, was Chemical Demonstrator at the college for some time, and has had a scientific training. He was a student of Leipsic University.

6204. With regard to the scientific side of the question, your view is that a very much larger grant should be given not only for agricultural instruction generally, but especially for poultry purposes?—Certainly.

6205. The United States give a very substantial sum for those purposes?—Yes, they give a lot of money.

6206. Has the giving of that money, so far as you can judge, borne good fruit?—I think it has.

6207. They seem to be very large grants?—Yes, very large sums.

6208. Are those entirely used for poultry?—No, not for poultry specially—they are for agricultural purposes. At the present time I believe they have four men travelling in the interior of China seeking for edible agricultural plants. Of course we should not want such a large sum of money.

6209. Your remarks were principally alluding to poultry. I see you say: "Nearly all the principal colleges until 1906 received £3,000 per annum each from the federal authorities for experimental work in agriculture, but at the beginning of the present year some have had the amount increased to £6,000."—I could not give you any definition of that, but if you look later on in that paragraph you will see it says: "At Storrs College, Connecticut, which has had half the grant to the State (£1,500), of that amount £200 was devoted last year to poultry experiments. That is rather less than one-seventh, and which appears to be a fair proportion." That is, I should take it to be about the proportion; that one-seventh of the agriculture grant is devoted to poultry.

6210. How are these colleges supported apart from the grant that they get from the federal authorities?—Of course they have very great advantages in that way, and they receive appropriations from the different States as well as from the federal government.

6211. These grants are from the United States Government itself?—The top one of those two lines that I gave before, £149,600 comes from the federal authorities at Washington, and the other, the £112,500, comes from the State departments of agriculture.

6212. I suppose they receive fees from the students?—No—the inter-State students are admitted free.

6213. Every student coming from the State itself?—Every student in that individual State, I believe.

6214. What about a foreigner from another State?—They have to pay fees.

Mr. E. Brown. 6215. You are Secretary, I see, of the National Poultry Organisation Society as well?—Yes.
5 June 1907.

6216. Is that doing good work?—Yes. That has helped us very greatly in the extension of co-operation in relation to the marketing of produce.

6217. That, I suppose, is one of the objects of it?—That is one of the leading objects of the Society.

6218. That is in order to spread a knowledge of the value of organisation in different parts of the country?—Certainly. The history of this really is, that in connection with the educational work of the counties, and in other ways, we found that we were increasing the production in this country very largely—the industry has grown enormously—and yet at the same time we were being beaten upon our own ground by foreign producers. When one came to inquire into it, it was simply that our system of marketing had not been improved, and consequently we had to set ourselves towards it. I look upon the Society as necessary to the accomplishment of my life's work, because I have been 30 years engaged in promoting this poultry question.

6219. It does not overlap with institutions which give instructions in poultry-keeping, does it?—We do not in any sense give instruction in poultry-keeping where that would be supplied by county councils or colleges. We have plenty of people that ask us for information, which we always give very readily, but we never give any instruction.

6220. I am not sure that I fully appreciate the distinction between this National Poultry Organisation Society and the work which is done in colleges?—No, but there again it comes to be a question of money. If we had been in a foreign country the National Poultry Organisation Society would have been subsidised by the Government, because of its educational work.

6221. So far as I have seen in their papers, I did not fully appreciate that there was a distinct work for them to do outside the work that the colleges themselves are doing in the way of teaching?—Yes, but it is so.

6222. (*By Mr. Lamont.*) On the last page of the very interesting statement which you read to us you say: "Two branches of poultry-keeping have never been adequately dealt with, because they necessitate special assistance which we could not provide for." I should like to ask which two branches those are?—One is fattening, which wants a great deal of enquiry into, and the other is turkey breeding. In the eastern States of America, if I may be just permitted to add that, there has been an enormous outbreak of disease, which I came to the conclusion was due to wrong methods of management, and in my American report, which was published in connection with the National Poultry Organisation Society, I suggested that our Government should absolutely prohibit the importation of live turkeys from America because of this disease. We have had some danger in this country from that direction, but we have never been able to enquire into it because of financial reasons.

6223. You think it possible if science were applied to the breeding of turkeys in such an institution as yours in the way of research work, that probably the causes and prevention of such diseases could be ascertained?—Distinctly. My own feeling with regard to research work of that kind has always been that if it was properly organised in the country, and the Board of Agriculture had authority, we might do a certain part of the research work, and the moment it came to reach beyond our staff we could then hand it on to the central authority for making their superior research, if I might use the term.

6224. Any special point that you felt yourselves incompetent to decide you would refer to them for further examination?—It has been my hope that we should secure that.

6225. Have you done anything in connection with eggs, for instance in the way of establishing a dépôt for the collection and marketing of eggs?—Personally I am responsible for that as Secretary of the National Poultry Organisation Society.

6226. I know you are well acquainted with what has been done in Denmark on those lines. Have you introduced that into the teaching at your farm?—Nothing more than mentioning it in the lectures.

6227. I understand you do not to any great extent foster the production of eggs there—I mean as eggs. You rather intend that they should be for breeding?—No, because we make a very important point in our teaching as to improvements in the production of the different races of poultry by selection. We use there what is known

as the trap nest system. We instruct our students in the use of it, and also in the development of the egg-laying. At this present moment we are having an experiment going on at Theale which will take, say, twelve months, one of the results of my visit to America. This is a copy of what has just been sent out to the Press. (*Handing document.*) We are testing a new system of feeding which I came across in America, and that is for the production of eggs entirely.

6228. To go back to this question of fees, is any special charge made for a poultry course to students who are taking the whole of the agricultural course at Reading, or are the fees which are charged at Reading for the agricultural course inclusive of the poultry course for the students desiring to take that?—The fees for the agricultural course at Reading would include certain lectures which I give to agricultural students, but if they desire to take up the poultry work through short or long courses, they would be additional. Part of that, of course, is owing to the arrangement between the college and myself.

6229. Both your practical course and the lectures, of course, go on during all seasons of the year?—Yes.

6230. At Cornell they are chiefly winter courses?—Yes.

6231. In the *Cornell Register* they say: "The lectures in this course will be given between Christmas and Easter, and the practice will be given only after the Easter recess?"—Yes.

6232. Yours, in that respect, is a very much better system, I take it, than at Cornell?—We could not do it on their basis. I think that is explained by the fact that at Cornell they have a large grant for experimental work which they must earn, and they devote the other periods of the year mainly to experimental work.

6233. In amplification of what you said, might I just read this with regard to the tuition of the students at Cornell College? I am reading from the *Register*: "Tuition is free to the students with State scholarships; to New York State students in the State Veterinary College and in the College of Forestry; to students pursuing the prescribed course in Agriculture and intending to complete that course; and to special and graduate students in Agriculture taking at least two-thirds of their entire work in the departments of agriculture, horticulture, and in the courses in agricultural chemistry," and so on?—Yes.

6234. You say in your notes "Provision is made in America whereby poor students are able to obtain employment in order to pay for board and lodgings, such employment being in or out of the College as the case may be." That came under my knowledge to a great extent. A great many students, not only in Cornell, but even in the more classical Universities, during their summer vacation get employment as waiters in some of the fashionable restaurants, and as pursers on pleasure steamers, and so on, and by that means make a certain amount of money, and are able to pay for their board and lodging?—Yes.

6235. Do you think that could be done in this country without the students feeling that they were losing caste?—That is the serious difficulty in this country. I came across a case at Cornell of a man who had taken his full four years course and his degree. He told me that he had no money when he went there. He was a very intelligent man. He told me that he sometimes used to drive the college team or to cut the grass there, and I said, "What about your fellow-students?" He said, "Well, I was secretary of the Cosmopolitan Club, and after driving home the team I used to change into my dress suit and go in amongst them, and was received just the same as the others." It is the students we have to fight here in that respect, not the teachers.

6236. (*By Mr. Latham.*) You have been speaking of lectures on agriculture, but you do not give these?—No; I do not lecture on agriculture.

6237. To what extent do you lecture in the counties generally?—I have lectured in 17 counties, but have not time for that work now.

6238. I perfectly understand that, but have they been very general?—Yes, all over the country.

6239. Are they well attended?—Very well attended. Of course, there were differences, but as a rule at those lectures we used to get very good attendances.

6240. There is a very great deal of interest in poultry-keeping in Sussex, is there not?—A great deal.

6241. You have not lectured in Sussex, have you?—No.

Poultry-keeping is a very highly specialised industry indeed in that county.

6242. The answer is that they do not require your services?—That would specially apply to the National Poultry Organisation Society. They do not need any organised society in their marketing down there, because their marketing is so thoroughly well organised amongst themselves now.

6243. The students who come to you all come with a great anxiety to take poultry-keeping up?—Yes, the great majority come to us for that purpose.

6244. They are all college students who come to you?—Yes, we do not accept any students except through the college.

6245. I agree with the remark you made, that it would be a great advantage, not only to your institution, but all institutions of a similar character, if they could be attached to a farm where they could get agricultural teaching.—Yes, of course; what I hope we shall do at Shinfield will be to teach poultry-keeping as part of the regular agriculture, and have the practical work done at Shinfield from a farmer's point of view.

6246. The farm at Shinfield is such a new departure for the college that there has not been time yet to get any of the poultry teaching taken there?—That is so. The Shinfield farm was bought primarily for agriculture without regard to poultry, and there are certain difficulties at Shinfield. For instance, it is a country that is infested with foxes, for one thing, and it would be a little difficult in that respect. We should have to make special provision for that, and then again the land is not very suitable for poultry.

6247. You have made some rather strong remarks about the breeding of turkeys in England. There are some districts where turkey breeding is exceedingly successful, are there not?—Yes, certainly, but that may be explained by this statement, that a system which is suitable where a few birds are kept around a homestead is no longer suitable when you increase the number beyond the capacity of that immediate land to deal with. At the present moment there is a tremendous outbreak of disease in Italy, simply because they have increased their birds beyond the capacity of the land, and that is also taking place at the present time in America with regard to turkeys.

6248. You have said that Dr. Curtice was engaged in enquiries as to a disease in America in turkeys. That is called "blackhead"?—Yes.

6249. Is that an English disease?—No, I am not aware of a single case here.

6250. Will you kindly tell us what the disease is?—It is really a disease due to bad conditions, in which there is a great inflammation from the presence of a microbe in the system. It is the discovery of this that they have been working at for three years.

6251. (*By Professor Middleton.*) Can you tell us how the disease shows itself?—The head turns black, there is a very high temperature, a gradual loss of flesh, and the bird dies in a feverish condition.

6252. Is there a great swelling about the nose?—No, it is not that. The red on the face turns almost black. Every country has its own diseases in these things.

6253. (*By Mr. Latham.*) With regard to this question of free grants in America, is it not only free grants in poultry-keeping, but to all the agricultural subjects?—That is so distinctly, but the lesser is involved in the greater.

6254. We are paying an enormous amount of money for foreign poultry, eggs, etc., and do you not think with better management and treatment we could increase the production very largely?—Yes; we have increased it very largely in the past, and we can do more in the future.

6255. Agriculturists have not taken much interest in it, I am afraid?—They are a great deal better than they used to be. There has been a wonderful development in that direction, but still a great deal more might be done.

6256. It is the special man or woman that is doing it, not the general agriculturists?—In some districts that would be so, but not in others. At the present time we have only about three-quarters of a fowl per acre of cultivated land in this country. We could treble that without difficulty, and without interfering with the present crops, or anything.

6257. The price we get for our produce compares favour-

ably with the price given for foreign birds?—It is very much better. *Mr. E. Brown.*

6258. Does what you have said with regard to the increase in production apply to eggs as well?—Yes, the increase has been the same, and it is increasing.

6259. That is not the result so much of practical knowledge, but rather from the way in which scientific knowledge has contributed?—Yes, one has worked with the other.

6260. You make this remark in your statement with regard to the short courses, "At first these occupied three weeks, afterwards increased to four weeks, and in 1900 further extended to five weeks, at which they remain." Does that mean that the series of courses you give merely extended in length, or that there was more science given?—There was more science brought in.

6261. That is more difficult to get into short courses?—Yes, and more practical instruction was given to them at the farm. As soon as we got the farm they could do more.

6262. If you had a sufficient amount of money allocated to you, you could do a great deal more in practical work?—Certainly.

6263. With regard to your farm, you do very little scientific work at the farm?—We have done these various experiments, and we are constantly, as far as we can, doing experimental work, but it means a great deal of time. You will find these recorded in the experimental report published by the College. During the last twelve months we have been engaged in an experiment dealing with the value of poultry manure. The result was published in the *Journal of the Board of Agriculture* in March. It shows the value of the different classes of manure, and how it can best be used, and our reports with regard to the cost and the growth of chickens have enormously stimulated the production of table poultry, because people can see that it is a profitable thing to take up.

6264. Your little farm has been successful almost beyond your own anticipations?—Yes, from the educational point of view, but not financially.

6265. It has been thought that you have not been very well treated financially?—I should not like to say that. When I started the farm, and this was afterwards confirmed, it was an understood thing that the farm would be taken over by the College, and that I should not be allowed to lose by it. I have put a considerable sum of money into it, and I hope it will be taken over so that it may be continued as an educational and experimental establishment.

6266. Up to the present that hope has not been realised?—Not yet.

6267. Do you get many ladies come to you?—Yes, at the present time we have 12 students on the farm, of whom five are ladies.

6268. Had Lady Warwick's College anything to do with you—had you any students from there?—We had them in the early days because they went to the college. When the hostel was at Reading they were part of the college, and then we had their students, but not since then.

6269. You have nothing to do with the teaching at Studley now, have you?—Nothing.

6270. Was not a great deal of the success of that hostel due to you?—I suppose I had my share in it; I was the teacher in this subject.

6271. Could you give us any definition of what these pupils are on the farm. They are pupils—I perfectly understand that part of it, but what class do they come from or belong to. You have given us rather a large number attending the courses, 435, and a total number of 517. What are those students principally?—Out of those I suppose there must have been about 60 that were sent over from Ireland for the purpose of being trained as instructresses for the Irish County Councils. With regard to the others, we have had all classes of people, the main part of them are young men and women who have been desiring either to go out to the Colonies, or to take up poultry-keeping as a special industry.

6272. I suppose you are perfectly well aware, and particularly in Berkshire I think it is so, that a great many of the agricultural labourers are now keeping poultry. Have you given them any education?—No, I have never touched that at all, except by the County Council lectures. I lectured for three years for the Berkshire County Council.

6273. I perfectly understand you lectured to a certain class, but you have never been asked by the Parish Councils, for instance, to go in and lecture to the labourers?—No.

Mr. E. Brown.
5 June, 1907.

Mr. E. Brown. 6274. Do you think that could be done with good effect?—I think with regard to the kind of teaching in which there is less responsibility for making reports—by which we would get into touch with the people personally, if you had the right class of teacher there is a great deal to be done in that way.

5 June, 1907.

6275. What do you mean by the responsibility for making reports?—If you give a lecture, and you have so many people there, that can be put on paper and published, but if you go and talk to a man in his cottage and show him how to carry out his work better, you cannot put that into a report to the County Council, and so there is not the same record.

6276. I certainly agree in that respect, but all stewards must give some account of their stewardship, you know?—I think that is so.

6277. Having regard to the small holdings question, almost all small holders would be better off if they kept poultry, would they not?—Yes. If you take a country like Wales, where poultry are largely kept, and kept very badly, if a man who understood his subject was given *carte blanche* to go up and down and advise the people, and show them better methods, stopping a week or a fortnight at one place if it was necessary, the increase in the Principality alone through better methods being adopted in the course of a few years would involve a tremendous sum of money.

6278. (*By Professor Middleton.*) You have felt the need for more research being done?—That is so.

6279. There are many unsettled problems in poultry-keeping?—Yes.

6280. I should like you to indicate to us what you consider the most important type of problems. Are they connected with the feeding, the management, or the diseases of poultry?—So far as the management is concerned, if you take the question of housing, we have practically settled that question without any public grants. We have worked our way through that. The problems that present themselves at the present time are largely in the direction of artificial hatching and rearing. There again we have settled one part of the problem by what is known as the dry feeding system. Our losses in three years by artificial rearing amounted at one time to 45 per cent., but by experimental work and by adopting a different method of feeding we reduced that to 5 per cent., which made all the difference in profit. Then there is a great deal to be done in the way of feeding both for general purposes and for fattening purposes, whilst the subject of disease is practically untouched as yet.

6281. You yourselves as poultry-keepers would be competent to undertake the type of experiment that you have outlined under the first two headings; artificial hatching and rearing?—Up to a certain point. You want the practical man to face the question and work with the pathologist and scientist.

6282. (*By Mr. Latham.*) Can you give us any poultry establishment which is carried on at a profit?—You have opened a very wide question. The point is this: there are two ways of looking at poultry-keeping. The farmer, by simply adding poultry to his farm stock, ought to be able to make a profit from the first hen he keeps if he manages it properly, but the moment you specialise then

all the basal cost, the establishment charges, have to be met from the poultry themselves, and under those circumstances it is necessary to carry it out on a large enough scale to give an adequate return. For instance, if we allow a fair estimate, it is not an excessive one, that you make a profit of 5s. per hen per annum, 1,000 hens would only give you a profit of £250. Out of that you would have your establishment charges to pay, and consequently no man could make a living out of a 1,000 hens alone; he would have to keep more. In America, at Lakewood, one place at which I was, they keep as many as 4,500 hens. Consequently the specialist establishment is an establishment where they must produce eggs for hatching and add other profitable branches. It is exactly the same as if you travel down to Reading, you see Sutton's and other nursery gardens. They could only spend the money they do by catering for those who are willing to pay the higher prices for supplies for their private gardens, not from a marketing point of view.

6283. (*By the Chairman.*) Do I understand that your case is that the agricultural students at the college in every case should be trained in aviculture?—Only to a limited extent. I think the way you are bound to deal with it is this, that every agricultural student coming to the college should have lectures upon poultry-keeping as part of his course. I give 20 lectures to the in-college students every year as part of their course. What I hope we shall arrive at at Reading is that upon the agricultural farm at Shinfield we shall keep a number of poultry in the same way that a farmer would keep a few fowls, and the student will be able to obtain a certain amount of practical knowledge, but as soon as ever he wants to specialise, exactly as in dairying or as in horticulture, he must then take a course at the special establishment where that is taught.

6284. Some of the students who have obtained the agricultural diploma at the college afterwards come for courses at the college poultry farm?—That is so.

6285. Those are specialists?—Yes, they specialise upon that subject.

6286. Your opinion is that the teaching which should be given to the general agricultural student should be of a different nature from the teaching which is given to the special student?—It would be of an elementary nature.

6287. Does it include visits to your farm?—They generally pay one visit a year; that is all.

6288. The training is different at your farm?—The training is special.

6289. With regard to your students, those who specialise, is it necessary in every case—I am not talking of those who come for the five weeks or the ten weeks, but of your best poultry student—that they should have had a preliminary agricultural course at the college?—Certainly, that is always what I aim to get; that they must understand something about agriculture.

6290. Therefore we can summarise it in this way, that the agricultural student must have a certain elementary knowledge of aviculture?—Certainly.

6291. And on the other hand, the poultry student, the student whose main object is to specialise in aviculture, you consider that he must have a preliminary training in agriculture?—Distinctly so.

Mr. H. R. MILL, D.Sc., LL.D., called and examined.

Dr. H. R. Mill.

6292. (*By the Chairman.*) You are the President of the Royal Meteorological Society?—I am.

6293. The Council of the Royal Meteorological Society has been considering the best means of promoting the study of meteorology in the belief that increased knowledge of the principles of the science on the part of the public would result in many practical advantages?—That is so.

6294. You have appointed a lecturer to visit various parts of the country?—Yes.

6295. Perhaps you will explain to the Committee what the Society intend to accomplish by those lectures?—The idea of those lectures is to increase the interest in the science of meteorology. The lectures at present have been arranged chiefly with the local scientific societies, and also in connection with certain schools. The lecturer has a certain number of subjects which are selected by the centre

to which he goes, and these lectures have usually been attended by considerable numbers of people. The object we had in view was to increase the interest, rather than to impart full instruction; and of course the Society is always prepared to answer any questions on the subject that may be addressed to it, to recommend text books, and generally to assist in disseminating a knowledge of meteorology in every way.

6296. Who bears the cost of these lectures?—The cost of these lectures is borne partly by a guarantee fund subscribed by Fellows of the Society, and partly by the various institutions to which the lectures are given. Hitherto I think the various institutions have practically defrayed the out-of-pocket expenses, and the Society has paid the lecturer.

6297. The salary of the lecturer is provided by the

Society?—Yes. The lecturer, as a matter of fact, is the Assistant Secretary of the Society, and he gets leave of absence from his other duties in order to enable him to carry out this work.

6298. Those lectures have been given throughout England?—Yes, in various parts of England, and I think on one occasion we went across the border into Scotland.

6299. They have been well attended?—They have been very well attended. I may mention that lectures have been given by other members of the Society also. I have personally given a good many Gilchrist lectures on various subjects connected with the weather. They are purely popular lectures, but they have satisfied me that the desire for information is strong and the interest is quite lively.

6300. Those lectures are attended largely by farmers?—They are attended largely by the people of the neighbourhood. The Gilchrist lectures are attended more by the industrial classes, because populous centres are usually selected, but the other lectures have been attended very largely by farmers, and frequently have been given in connection with agricultural exhibitions.

6301. In connection with agricultural shows, you exhibit a complete second-order meteorological station?—Yes, we keep one of these exhibits ready to send out. In connection with the Lincoln Show of the Royal Agricultural Society this month, we have prepared a special exhibit, including a number of charts and diagrams which have been specially prepared, as well as meteorological instruments. That will be attended by the Assistant Secretary of the Society, who will give the fullest information possible to everyone enquiring. It was extremely successful at the last show that was held at Park Royal. The meteorological exhibition was visited then by a very large number of people.

6302. You consider that while all classes, of course, need instruction in meteorology, those who cultivate the soil, and those who are at sea, have a special and direct interest in the knowledge of meteorology?—Yes, their interest is more direct than the others. Of course at one time farmers, sailors and fishermen knew more about the weather than any other people, and they were better able to predict the weather than any other people, but that is no longer the case, because the growth of scientific knowledge has put the old rule-of-thumb knowledge quite in the background, and much more precise information can now be obtained by reading the weather reports and attending to meteorological instruments than by simply watching the signs of the sky.

6303. You think that a farmer ought to have sufficient knowledge to be able to understand an isobaric chart, and to grasp the bearings of the Weekly Weather Report?—I think that is very essential. The Weekly Weather Report in particular is compiled at the public expense mainly for the benefit of farmers, and I am afraid that a very large number of farmers are not able to profit by this expenditure of public money on their behalf, because of their inability to understand it.

6304. You think it would be desirable to disseminate that Weekly Weather Report at a minimum of cost?—I think it would be most desirable. At present it costs 30s. a year. I do not speak with authority because I do not belong to the Meteorological Office, but the number of subscribers is, I believe, very small, while, of course, the publication cannot possibly be made self-supporting, and as the work is done it would cost comparatively little more to scatter it widely over the country.

6305. We have just been told that in the United States a great deal is done in the way of disseminating information, for instance, by free distribution. There is no postage charged by the Government, although, of course, that is rather a small matter?—That is so. In the United States they make every possible effort to distribute the information as widely as possible, for instance, by means of special signals on trains in the Far West, and in many other ways by the Weather Bureau, which is under the Department of Agriculture, and which is always ready to send out any amount of its literature to anyone that asks for it.

6306. Are you aware whether any farmers' clubs throughout the country subscribe to this weather report?—I know a certain number do, and a certain number take advantage of the special hay harvest forecasts, and of the special corn harvest forecasts, but the number is very small.

6307. You are at present in correspondence with the various agricultural colleges and with some of the educational authorities in different parts of the country with the object of ascertaining to what extent instruction

in meteorology is now being given?—Yes, there is a special Committee of the Royal Meteorological Society which has been charged with that work.

6308. In several cases a full answer has been postponed?—Yes. The letter to the different authorities was only sent out about six weeks ago, and we expect to get further information at a later date, but in several cases we have seen the syllabuses of the colleges, and we find the state of education in this particular subject to be far from satisfactory.

6309. In some of the colleges instruction in meteorology is given incidentally in relation to other subjects?—Yes.

6310. In most of the colleges there are meteorological instruments?—Yes. I think I might almost say in all of the colleges there are meteorological instruments, and in some of them they are good instruments, well observed, and we know they are being made use of to the utmost.

6311. That the observations are kept with precision and regularity?—That is so.

6312. You are not prepared to say that that is applicable, to all?—No; I cannot say positively that it is not, but from the want of information I very much suspect that it is not.

6313. Of course an ill-equipped or badly-appointed meteorological station would go far to undo the educational value of scientific observations?—Entirely so.

6314. And would really be worse than no observations at all?—Very much worse, because it would teach a sort of contempt of the instruments and the records.

6315. Your Society is of opinion that provision should be made in all agricultural and horticultural colleges, and in technical schools in rural districts, for instruction in meteorology?—Yes, very strongly.

6316. Would you give the reasons to the Committee for that suggestion?—The main reason is that it would enable farmers and gardeners to make use, to the full extent, of the existing means of information regarding the climate and weather—including the publications of the Meteorological Office. These publications are produced at public expense, but as I have just said, they are sent out at present only to subscribers. A good many of the predictions produced by the Office are published in the newspapers, but a great many of the farmers are not able to understand these predictions or to benefit by them to any extent. That is the first object that would be kept in view. Then the second object would be, from the scientific point of view, much more important, that is, to direct attention on the part of farmers to the relations between meteorology and the crops, so as to enable them to collect data in order that the relationship between the crops and the weather may be laid down on a thoroughly scientific footing.

6317. The value of that on the meteorological side would be to give purely scientific results, and on the agricultural side the results would be mainly practical?—That is so. The only interest of the Meteorological Society is from the scientific side, but to the farmer the knowledge of the probable weather he is going to experience, and of the probable effect it will have upon his crops, would be of very great practical value. In fact, I know instances. There is one, not a farmer, but a corn merchant, who told me that his knowledge of the laws of the weather enabled him to make a great sum of money every year that he could not otherwise make, by being able to predict in advance the nature of the crop from the nature of the weather; and that sort of thing, of course, could be extended very widely if everyone had the necessary knowledge.

6318. That would be the financial side?—Yes—what I have heard called the practical side.

6319. You have some suggestions to lay before the Committee with regard to the development which could be given to the study of meteorology in those colleges where it is at present recognised, and how it should be introduced into those where it has not as yet been recognised?—Yes. Of course, this is a subject on which I speak with great diffidence, because it is very difficult for an outsider to make a really useful suggestion as to introducing a new subject into a curriculum with which he is not thoroughly acquainted; but almost all the colleges do at present maintain a certain equipment of meteorological instruments, and we would like to see that equipment raised to the level of what is technically called a second-order station, that is, a station with instruments for making all the ordinary observations on the weather at which observations are made by eye twice a day. A first-order station, I may mention, is one where the variations of the elements are recorded by mechanical means. A second-order station is one where the same observations are made, but only at

Dr. H. R.
Mill.

5 June, 1907

Dr. H. R.
Mill.
5 June, 1907.

intervals twice or three times in the day by direct readings of the instruments. We think that such a station might be established in every college, and that all the students ought to be trained to read the instruments and to record the results, under the supervision of a professor or lecturer who would himself require to become thoroughly acquainted with them before he could properly train others. The idea would be that no student should be able to leave the college without having had practical knowledge of the use of the instruments, and of recording the weather. Then again, in order to make this possible, and this is in fact merely a minimum, it would in our view be extremely desirable that the Board of Agriculture and Fisheries should take steps to provide a central course of lectures on observational meteorology to begin with, although the subject might be enlarged afterwards to deal with the more theoretical part of the science, and that the Board should encourage the teachers in the various colleges to attend that course of lectures, and thereby acquire familiarity, or even proficiency, in the use of the various instruments and the general principles of meteorology.

6320. You also suggest that when the system is started it would be advisable to arrange for two students to observe together, one having had previous experience, the other being in training?—Yes. That is just a little practical point intended to show that it would not be necessary for the professor or lecturer to go round the instruments every time the instruments were read, and that one student would be able to teach the other.

6321. You are, of course, aware that at the agricultural colleges the number of subjects already taught is considerable, and the time necessarily limited, but I suppose you would say where the Principal is interested in the subject that these lectures could be easily added to the curriculum without encroaching too much on the time?—I think that that could be done in the great majority of cases, and I believe it might be done in all. It is one of those things in which where there is a will there is usually found a way.

6322. The subject is so interesting that it would, naturally, be an attractive one to the students of the colleges?—I think unquestionably so, and the bearings on agriculture are so direct in many cases that it immediately impresses itself upon the mind of the student.

6323. You think that representations should be made to the Board of Examiners for the National Diploma in Agriculture of the advisability of introducing meteorology as a subject of examination?—I am afraid I personally dislike examinations very much. I have had a great deal of experience as an examiner, and I am sorry to have to think that the screw would have to be put on from that side, but it is the only way. All colleges, and even universities, declare that the requirements for examinations must be worked up to, and if a subject were required for an examination, it would be made practically compulsory.

6324. You would prefer, of course, that the examination should be correlated to the instruction given at the college?—Very much so. Personally, I should prefer that it would be found necessary to introduce it into the examinations because it was realised to be an important subject by the colleges, and it is only in the hope that that recognition might come the more rapidly that I would suggest that any influence should be brought to bear upon the examining Board.

6325. You have given us the syllabus of ten lectures which were given by Dr. Dickson at the University College, Reading?—Yes.

6326. Would you consider that a minimum?—Yes. Dr. Dickson is a member of our Council, and has a thorough scientific knowledge of meteorology, and also has experience of a class of students similar to those in agricultural colleges, and I think his syllabus is an extremely practical one. It is, as you say, a minimum to make a beginning with, but it is very excellently framed.

6327. You believe there is no lack of interest among farmers as to the bearing of meteorology on agriculture?—I am quite sure of that. I may say that in my work, as Director of the British Rainfall Organisation, I am in direct correspondence with about 4,000 people in all parts of the British Isles, of whom I should say quite one-third are either farmers or gardeners, and these carry on observations on rainfall, and many of them on other meteorological elements, and their observations are carried out with both skill and intelligence. They write in an extremely interesting way, and in the volumes of reports which are published annually there are always more than a hundred pages of notes written by those observers. I am sorry I did not bring a volume with me to show the Committee,

but one can easily be sent. Similarly, in connection with the Royal Meteorological Society, Mr Mawley, a member of our Council, has a system of phenological observations, the date of the flowering of plants, the date of the arrival of migratory birds, and so on, and whether the crops are early or late. He also is assisted by a large body of people all over the country, and their assistance in providing data for his report is extremely valuable. The Phenological Reports are published annually in the *Quarterly Journal of the Royal Meteorological Society*, and they prove conclusively that there is a large body of people interested in the subject. I know from other sources also that there is considerable eagerness to acquire the more scientific part of the instruction as well, only the opportunity so far has been wanting.

6328. The Council of the Royal Meteorological Society is fully aware and highly appreciative of the great interest taken in the relation between meteorology and agriculture by the Board of Agriculture?—Yes, certainly.

6329. And your Council are quite prepared to assist the Board of Agriculture in promoting this particular aspect of agricultural education by any means that may be found possible?—Yes, the Council is most anxious to do that. Of course the Council of the Meteorological Society has followed the work of the Board of Agriculture with great interest, and some of the papers—especially a paper recently communicated to the Statistical Society by Mr. Hooker—have been hailed as the beginning of a new era of research into the relations between meteorology and the farm crops. That is a paper on the correlation of weather and crops.

6330. Research, you think, in that direction will yield very important results?—Very important indeed.

6331. You think the number of people engaged in the research work ought to increase?—Certainly.

6332. And that more money ought to be spent in that direction?—I am afraid that will be necessary.

6333. (By Lord Barnard.) I do not quite know whether I understood you rightly to say just now that you were not associated with the Meteorological Office?—That is so.

6334. Would you kindly explain what the Meteorological Office is?—The Meteorological Office is under a Committee appointed by the Treasury to administer a grant of about £15,000 annually. It has two principal duties—one to study the meteorology of the ocean, which it does through its Marine Department, the other to prepare weather reports and weather forecasts for the British Islands, which it does by its Telegraphic Reporting and Forecast Department. It also carries on a considerable amount of research into various problems connected with meteorology. The Office was recently the subject of investigation by a Treasury Committee, and as a result of that investigation it was reconstituted on a new basis.

6335. Do you appear on behalf of the Meteorological Society?—Yes.

6336. Then we must be careful to keep the two things distinct—the Meteorological Office and the Meteorological Society?—Yes, the relation between the two is exactly similar to the relation between the Geological Survey—which is the Government department (under the Board of Education, as it happens)—and the Geological Society, which is an independent society; or it is similar to the relation between the Ordnance Survey, which is under the Board of Agriculture, and the Royal Geographical Society, which is quite distinct.

6337. Are you Secretary to the Meteorological Society?—I am the President of it.

6338. I do not know whether you have studied the terms of reference to this Committee or not?—I have read the terms of reference.

6339. I was going to ask you in what way you would suggest that this Committee could take any action on the evidence which you have given us. The reference to this Committee is: "To enquire as to the provision which has now been made for affording scientific and technical instruction in agriculture in England and Wales, and to report whether, in view of the practical results which have already been obtained, the existing facilities for the purpose are satisfactory and sufficient, and, if not, in what manner they may with advantage be modified or extended." I should like to ask you in what way you suggest this Committee should recommend further facilities in meteorological knowledge as part of scientific and technical instruction in agriculture?—I consider that imparting a knowledge of the methods of meteorology is technical instruction in agriculture to this extent, that it helps a farmer to decide difficult questions that arise occasionally

as to whether he should proceed with a certain agricultural operation in certain conditions of weather, or whether there are sufficient data before him, in the published reports, say, of the Meteorological Office, to justify him in postponing it on the ground that better weather is coming.

6340. Do you suggest that this Committee should put in some recommendation such as this: that we do not consider that higher technical instruction in agricultural science can be complete without a knowledge of meteorology? Would you go as far as that?—I should, I think, almost go as far as that, or I would say at least "without greater attention being devoted to recent results in meteorology."

6341. I gather as a matter of fact that your Society is at the present time endeavouring to impress upon the various agricultural colleges and institutions the necessity for including this subject amongst their other courses of study?—We have not got quite to that stage yet.

6342. You referred to a letter which had been sent out to the different educational authorities?—Yes, a letter asking for information as to what was the state of instruction in meteorology at the present time. As soon as we have satisfied ourselves as to what the state of instruction is, then we propose to write another letter, and we shall perhaps be able to offer more practical suggestions, but in the meantime we wish to find out all we can about the subject before we presume to advise.

6343. You have given us some account of the position which the Meteorological Office occupies. With regard to disseminating practical knowledge on the subject, do you suggest that the Board of Agriculture should discharge the functions of that Office so far as agriculture is concerned?—Not at all, but I should personally have been very glad, as I think I said in evidence before the Treasury Committee, if that Office had been put under the Board of Agriculture, as it is in America, although I do not propose for the moment that the Board of Agriculture should interfere with the present arrangements of that Office.

6344. It occurs to me that there are two other most important industries which are as vitally affected by weather as agriculture is; one of them of course is shipping, and the other, which I believe is affected most of all, is mining?—Undoubtedly shipping is, and the fishing industry, but with regard to mining there is a curious difference of opinion. There is no doubt that great changes of atmospheric pressure do cause outrushes of gas in mines, and it is very important that this should be understood.

6345. Have you any evidence to offer as to the appreciation of agriculturists with regard to the hay and harvest season forecasts? I will tell you why I ask the question: I live in the North of England, in the County of Durham, and I have a considerable number of tenants in the dales where hay is the only crop, and it is of vital importance that they should get their hay crop as satisfactorily as possible. But, as you know, it is a wet district, and I thought it would be of help to those men if I obtained and paid for the forecasts: but although I did that I found that they did not care twopence about it?—That is just where I think they want to be educated.

6346. You think if knowledge of the subject could spread, they would in time come to appreciate the value of it?—Yes. Of course one of the very great difficulties is that people who are only imperfectly educated do not realise the meaning of probability. If they get a hay harvest forecast, and it does not come strictly true, they discredit it for ever after. That is the great difficulty. If you could only get them to understand that in, say, 80 per cent. of the cases they would save their crops although in 20 they might lose them, then I think they would appreciate it very much more.

6347. You are aware of the system of the Board of Agriculture Correspondents?—Yes.

6348. I wonder if anything could be done through them in the way of spreading knowledge of the existence of the work that is done by your Society, and of the great advantage that would be likely to accrue to agriculturists by a knowledge of meteorology?—I think they would be a very good vehicle indeed for spreading a knowledge of the assistance and facilities that might be given by the Society and the Meteorological Office.

6349. How are meteorologists trained at the present day?—I suppose they grow, as a matter of fact?—I am afraid most of them grow.

6350. Do you look forward to the day when you will become more organised in meteorological teaching?—

I do not think so, because there is really no outlet for professional meteorologists in this country. There are certain observations carried out by authority of the municipality in some seaside towns and a few observatories, but there are no remunerative openings for a large number of meteorologists.

6351. Is there more outlet in other countries?—Only from the educational point of view. In Germany there are several meteorological lecturers and professors in the universities.

6352. Do you think it would be of advantage to agriculture if the teachers in elementary schools were equipped to give some slight instruction in meteorology?—I am rather embarrassed in answering that point on account of my position here, because we are not quite at one on the Council on that subject, but personally I would not attempt in an elementary school to teach much of the scientific principles.

6353. We hear a great deal at the present day of the value of nature study for elementary teachers, and it occurred to me that meteorology should go hand in hand with nature study?—Yes, and it has been recommended by the Board of Education for that reason. From some aspects nature study is meteorological study.

6354. Yes, especially with regard to the flowering of plants and subjects of that kind?—Of course.

6355. Am I right in supposing that not only is it very desirable that agriculturists should be able to understand weather forecasts, but that they should generally be able to understand the value and importance of the data to the district in which they are operating?—I think that is certainly very important.

6356. For instance in the district I mentioned just now, the dales in Durham and the Pennine Range district where it is very important to know the amount of moisture in the atmosphere and things of that description?—Certainly. In that district we know very little indeed of the conditions of climate, because there are so few observers. We do know a little about the rainfall, because a number of waterworks engineers take observations bearing upon water supply, but in the district that you name there is very little of the sort, and very few farmers do anything of the kind. It is one of the places that we know least about in the country.

6357. (*By Lord Moreton.*) I understand that the Royal Agricultural Society has been able to add a very attractive exhibit from your Society to its other exhibitions at its Shows. Are you satisfied with the result of your shows?—if I may use the term—at the Royal and other Societies. Do you think they are thoroughly appreciated by the right sort of people?—Yes, I think they are.

6358. You had some very attractive pictures at the last Royal Show of people who had been killed by lightning and that sort of thing?—That is quite a small matter.

6359. Do you think the knowledge gets down to the small man, the man who particularly requires to know about these matters?—I was informed by the Assistant Secretary that a number of just the right sort of people took a great amount of interest in the instruments which were exhibited, about which there is nothing sensational, and as to where they could be obtained, and so on, but as to how far they have acted on that there has not been time yet to judge. My feeling is that by seeing such an exhibit again once or twice they will probably be induced ultimately to acquire instruments and to take observations themselves, and then to enquire the way in which those observations can be usefully applied.

6360. Taking the case of the ordinary farmer who wants to start with a sufficient number of instruments to make his own observations as far as he is capable of doing it, could you give us an idea as to what that would entail upon him in the way of expense nowadays?—Not any great expense. Of course the expense varies with the completeness of the installation, but quite satisfactory thermometers, for instance, can be had that cost only a few shillings each. It is certainly not wise to use too cheap instruments because they are not accurate, and do much more harm than good, but a very good thermometer can be had for about 5s., and one which would be accurate. I would not recommend anything cheaper than that. Then, again, a rain gauge can be got for about 10s. A barometer is a more costly instrument, but that is not so much required really, because everyone is within reach of the weather forecasts in the papers which help one really more than observations of the barometer would do.

6361. In that case one need not be very much frightened with regard to the expenditure that would have to be

Dr. H. R.
Mill.
5 June, 1907.

Dr. H. R. Mill.
5 June, 1907.

incurred to equip oneself with a sufficient apparatus for taking observations?—I do not think so.

6362. (By Mr. Norman Lamont.) Can you tell us how the Meteorological Society is financed?—Like other societies of the kind it is supported entirely by the subscriptions of its members.

6363. There is no Government grant?—No Government grant, and that is rather a grievance, because most other societies at least get their rooms free, but we do not.

6364. It is financed purely by the subscriptions of the members, and also I think I understood you to say there were payments, other than subscriptions, of 30s. a year for the reports?—That is the Meteorological Office. Of course we do sell a certain number of our publications in the Society, the *Quarterly Journal* and the *Meteorological Record*, but the total amount is very trifling; it simply slightly reduces the cost of printing, and the income of the Society is practically entirely from the subscriptions of members.

6365. Do you suppose you would be able to extend your work in useful directions if you had a grant from the Government?—Yes. There are a great many directions in which the work could be extended most usefully, but I may say that at present we are not asking for a grant. Our object is rather to offer any assistance we can give with regard to the organisation of the subject, in the hope that any ultimate profit which might come to us might come in the way of an increased future membership.

6366. With regard to the Meteorological Office, can you tell me to what extent it is dependent on its subscriptions or payments of 30s. a year?—They publish their balance-sheet annually in their report, but I think I may say quite definitely that the amount received in subscriptions for those publications is absolutely trifling.

6367. The reports are issued weekly, I understand?—The special agricultural report is issued weekly, but there is also a daily weather report, the price of which is less. That only comes to £1 per annum, including postage.

6368. I understand the United States Weather Bureau circulates its reports free?—I know they do to a large extent, but whether they are absolutely free to everyone I cannot say.

6369. At any rate they are published in every newspaper, not only throughout the States but throughout the American Continent, and also in the West Indian Islands there is a local branch of the United States Weather Bureau, which is of great value to the planters and growers in those islands?—Yes, the United States have annexed the West Indian Islands from a meteorological point of view.

6370. Do not you think, in view of the numerous studies that are already being taught in the colleges, that it might perhaps introduce complications if we were to add meteorology to the subjects in which instruction is already being given?—I do not think it would if it were added in the right way. I should be inclined to introduce it, as I have already suggested, by systematising the observations of the instruments which are already part of the apparatus of every college. That could be done without interfering with the schedule time at all.

6371. Your idea is to make every farmer his own meteorologist?—I do not say that exactly; what I say is that I would like to make every farmer capable of understanding what is done for him by meteorologists.

6372. Do not you think it would be better rather than the meteorological forecasts should be taken by experts in the agricultural centres, and that advice or suggestions based upon those forecasts should be circulated as widely as possible amongst farmers and agriculturists rather than that time should be taken up by agriculturists in taking those meteorological forecasts for themselves?—Yes. I do not propose for a moment that they should make their own forecasts, but merely that they should be trained sufficiently to appreciate them when they receive them from the meteorologist. It is very similar to learning the alphabet. I want them to be able to read in a scientific sense those forecasts.

6373. Perhaps that is a matter for the elementary schools, as Lord Barnard suggested, rather than for the agricultural centres, whose work we are more directly concerned with in this Committee?—No, I think it is rather beyond the elementary schools. I think the farmer has begun to think sufficiently to be able to appreciate the importance of it: to the child in the elementary schools it would be merely a piece of task work, and I could never hope, I am afraid, to get the elementary teachers sufficiently imbued with a scientific spirit to teach the small

amount that could be taught in a sufficiently intelligent way. It is therefore eminently a subject, in my opinion, for the agricultural colleges.

6374. With regard to what you said as to the difficulty of getting cheap and accurate thermometers, do you know that Stephens' Inks, for instance, circulate thermometers of a very large and costly type free, as an advertisement?—Yes. I have no objection to them circulating the instruments as an advertisement if they would only circulate a Kew certificate along with them.

6375. Do not you think if, for example, Thorley's Food and Sutton's Seed were to be advertised by the distribution of thermometers and barometers that the importance of meteorology would be more widely realised?—I think it would be a most admirable thing to do. I may say that one of my great difficulties is to induce some of the leading seedsmen and people who sell rain gauges, and other instruments, to know a good instrument from a bad one. Some of them put in their lists the most shockingly bad things at prices at which they ought to be fairly good.

6376. The people who sell the instruments themselves require to be educated?—Yes; and they could supply good thermometers quite as cheaply as bad ones; it may be indeed that those ink thermometers you spoke of are all right.

6377. I can only say that I have come across one or two of the ink thermometers that are quite right?—No doubt.

6378. (By Professor Middleton.) Your suggestion was that in connection with each agricultural college there should be a group of instruments representing a second-order station, and that students should be taught to use them to make observations, and to draw inferences from the results obtained by the use of those instruments?—Yes.

6379. I think there all of us will agree with you. You would go on to say, however, that we must have meteorology included in the examinations?—I do not say "must." I guarded myself there, but I think it would be very desirable that the examination papers should at least include a mention of meteorology if only to impress it upon the mind of the teacher.

6380. Do you know that that would probably mean that the teacher would say that there must be first a preliminary course in physics and other subjects?—I am afraid that that argument could be employed in any attempt to increase knowledge.

6381. That is so I daresay to a great extent, but the difficulty is that the curriculum at present is overburdened, and there is a disinclination to take up any subject which involves examination. On the other hand, I do not think there would be the same disinclination if one could be assured that examinations would be kept out of sight?—If that really were the case I should be overjoyed, but I should hardly expect that there would be such an elevated sense amongst the teachers, because from my experience as a rule the ordinary teacher or lecturer does not care to add to his curriculum subjects in which there is no examination. There must be a difference since my time.

6382. Speaking as a teacher, I think agricultural students do appreciate, and are very much interested in this particular subject, especially in weather forecasts, and once, in order to test what they were capable of, I took an elementary class of short-course students through some sections of this subject, and found they were more interested in it than in any other part of the course?—So much the better if they can do it without examination; they would satisfy an intelligent examiner if they had an interest in the subject.

6383. Some reference was made to the necessity of making the farmer's son an observer. My experience amongst farmers is that many of them are pretty good observers with one or two instruments, especially with the barometer?—Undoubtedly many of them are.

6384. Farmers, especially in hilly districts I think, use the barometer constantly, and are able to draw very fair inferences from the readings?—No doubt, and if they could at the same time correlate their barometer readings with the weather charts published, say, in *The Times*, or in any weather report, they would be able to avoid some of the errors they otherwise could not help falling into.

6385. That would imply, of course, farmers getting the forecasts in time?—That is the chief trouble, having regard to the geographical position of this country, but now things are improved a bit, and we get telegrams from

Ireland and the Azores which help very materially, and place things on a much more satisfactory basis than they were several years ago.

6386. My experience is that farmers appreciate this kind of thing very much?—Yes, that is also my experience.

6387. And that they make more use of it than they usually get credit for doing. You have referred to recent papers on weather and crops. The kind of information contained in these papers is very well known in a general way to many agriculturists in the country, although it has not been reduced to paper and has not been brought before meteorologists?—I know there is a great deal of general information on the part of individuals, but my feeling was that the time had come now when it might be systematised and made not common but universal.

6388. (*By Mr. Latham.*) Do you think the interest of farmers in these reports is very general?—I think a great many farmers do not understand weather reports, and that if they did understand them the interest would be general.

6389. What education would you give them in order to make them understand them?—My own feeling is that the education I would give them would be to induce them to ask questions and give them an opportunity of having their questions answered.

6390. For some years I got reports sent down to me through the Post Office and I found them very inaccurate. How often do you consider these weather forecasts are accurate and inaccurate?—It depends on the district. In the outlying districts, in the extreme north-west of Scotland, for instance, they are very much less accurate than they are in the south-east of England.

6391. Where do they come from?—They are produced at 63, Victoria Street, by the Meteorological Office, and are based upon telegrams received from all parts of the country, and all parts of the North Atlantic and Europe.

6392. I live in a county where we have some hills and a good deal of vale. Are not they very much upset by the hills surrounding?—Not the severe storms. The severe rainstorms show very little relation to hill or valley.

6393. My experience is that sometimes a storm passes to one side of the hills and sometimes to the other, and that the

farmer gets very little education from the forecasts?—In the case of thunderstorms they are extremely local. In the conditions of weather when thunderstorms are likely to occur, one must, of course, be on the lookout for them, but if you remember the great Thames storm in June, 1903, when it rained in the Thames Valley for 60 hours without intermission—of course, that is a very rare thing to happen—that storm, I believe, was predicted by the Meteorological Office.

6394. How could any forecast possibly foretell that?—By noticing the direction in which the area of low pressure was travelling.

6395. I am one of the unfortunate people who suffered very much from that great rainfall, but I did not see it predicted that it was to last for 60 hours?—I do not say it was predicted that it would last 60 hours, but it was predicted. That storm doubled in its tracks. It passed round to the north-east and then doubled to the south-west.

6396. Lord Barnard put to you whether Correspondents of the Board of Agriculture could not help considerably in distributing these forecasts. How do you think that is possible?—I think they could help by disseminating a knowledge of the forecasts in their particular localities, and, I may say, from the point of view of the Royal Meteorological Society we would be quite as much pleased if the result was to bring about intelligent criticism of the weather reports issued in this country.

6397. How could Correspondents assist in distributing them?—They could tell many farmers who do not now know anything about either the Meteorological Office or its forecasts.

6398. What I understand upon that is that when you send the information down to us, we should let the farmers in general know that it will be sent to them or to the Post Offices if they wish it?—To let them know generally that they are already paying for an expensive meteorological department and that it is desirable that they should get their money's worth by finding out what the Department is doing, and if it is not acting to their satisfaction, means might be found for its improvement. I think it would be a very desirable thing if every farmer were sufficiently interested to criticise the meteorological forecasts in a way that would be helpful to those who prepare them.

Dr. H. R. Milk.

5 June, 1907.

Mr. E. VINCENT V. WHEELER, called and examined.

6399. (*By the Chairman.*) You are past Chairman of the Agricultural Sub-Committee of the Worcestershire County Council?—Yes.

6400. And Vice-Chairman of the Worcestershire County Council?—I am.

6401. You are prepared to give the Committee some evidence on the need for more or less advanced institutions, readily accessible, to which students of the ages of 13 or 14 might go?—Yes. I find the sons of the farmers who, I take it, are the lads we want to keep on farms, and at the same time give them a certain amount of scientific education, as a rule go on to their fathers' farms as soon as they have done at the elementary schools, and very often learn little more. My idea is you ought to get the whole of those boys and find a suitable school to send them to where they would continue their ordinary education, and at the same time learn a certain amount of practical agriculture—boys from the age of 13 or 14 up to 17.

6402. Is that immediately after they leave the elementary school?—Immediately after they leave the elementary school, because there is so very much danger that if they once go on to the farms they will never come off again.

6403. The instruction should be practical in such a school?—Yes, I should not have too large a farm—not to make the boys do a great deal of practical work, but just enough land to make them interested in farm work.

6404. How long would you keep them there?—Say for three years up to the age of 17—from 13 or 14 up to the age of about 17.

6405. That would be a practical education and also a continuation of their general education on elementary lines?—Yes. Then from there I thought the more promising boys could be sent to the higher collegiate institutions, of which we have several now—such places as the Harper-Adams and the Wye College.

6406. Those would be boys from the age of 17 to 19?—Yes. Those would be the boys who would be likely to follow it up from the scientific point of view.

6407. You think there should be first these practical schools which you have described, and then that more advanced instruction should be organised in every county?—Yes. At present I do not think there is enough demand to justify us in establishing a higher institution, but probably in time the demand would be created.

6408. They would act as feeders for the higher school?—Yes.

6409. Pending the establishment of those schools you would send them to the nearest collegiate institution?—Yes. That we do at present: we give £50 a year scholarships to send boys to what you may call the higher school, but what leads me to my opinion is that there has been very little demand for those scholarships. We have at the present time only two running, and I think during the whole time I have been Chairman of the Agricultural Committee we have only given I think six. That shows there is very little demand for them in our county.

6410. That seems to prove that the farmers are not yet ready for them?—No.

6411. You are of opinion that local experiments should be organised in consultation with the local authorities, and then correlated and circulated by a special staff from the Board of Agriculture?—Yes.

6412. In order to have the experiments repeated more than once a year and repeated in successive years on the same soil in order to get results under all conditions of climate and soil and in different years?—Yes. I feel there are so many people, like County Councils and others, making experiments who often arrive at conclusions which do not agree with each other in the slightest, and I should like

Mr. E. V. Wheeler.

Mr. E. V. V.
Wheeler.
5 June, 1907.

some experts connected with the Board of Agriculture to sift these results and see which are to be relied upon and which are fallacious.

6413. You think the Board of Agriculture should act as a kind of clearing-house, so to speak, in that respect?—Yes, and where they think experiments are doubtful they should have them carried out again in different parts of the country under their supervision.

6414. I suppose you are aware that whenever there is some special disease which breaks out in America the Department of Agriculture have a staff of men who can be sent down to the locality in order to investigate the cause?—Yes.

6415. That, I suppose, you consider desirable also?—Yes. That is very desirable also, and further there must be some money to do it with. I dare say, as you know, we have had an outbreak of this gooseberry pest in our county, and we have found difficulty in getting money to deal with it. Luckily we had some money in Worcestershire which was available and at my discretion, and we were able to use it for that purpose, but that was a stroke of luck.

6416. I see in Worcestershire you have a system of apprenticing boys for a course of manual instruction under practical experts?—Yes: that is for practical labourers. We have attempted in Worcestershire, as far as possible, to improve the class of agricultural labourers. A system began of holding classes for those lads all through the county, and we picked out the most likely of them and sent them for a three months' course, or whatever it might be, to work with a practical man. One thing we have taken up has been the pruning and grafting of trees. We apprentice these boys for the session, and they go through their work, and you can even now see the vast improvement in the trees in the county that has come about by that work.

6417. You select a practical man in the county on account of his knowledge, and you send the boy to him?—Yes—for instance, my own shepherd took a boy some years ago for shearing. Another man is an expert grafter, and we send a boy to him, and give him so much to teach the boy, and the boy so much to keep himself for the session, and if he does well we send him for another session.

6418. Is that done by the county?—Yes.

6419. Are the people to whom they are apprenticed in any way remunerated?—Yes. I think we give them two guineas for the session's work, or some such sum as that.

6420. Are the sons of labourers eager to obtain those apprenticeships?—Not so eager as I should like to see them, but we do have a good many. I think we had four for grafting this time and six or eight for hop drying.

6421. You think after they leave the elementary school they should have continuation classes provided for them?—Yes, because many of them after they leave school never take up a pen again.

6422. Are the continuation classes organised in Worcestershire?—Not very generally. They are more in the towns than in the country. Of course there is a difficulty in getting a boy after he has done his day's work to go to those places, and they do not go much in the country places.

6423. Are there any lectures given throughout the county on agricultural subjects?—We have no regular lecturer employed, but where there is a demand in any locality for a lecturer on special subjects we employ a lecturer to go and give lectures in that.

6424. You have no difficulty in finding men to give those lectures?—No, we generally find them. In veterinary science we employ a local veterinary surgeon, and we have employed him for some years. There is also a travelling dairy, and from the pupils of the travelling dairy we select the most likely and give them scholarships to go to any dairy college they like—Reading or any college they would like to go to.

6425. Do you have veterinary lectures?—Yes.

6426. Is anything done for farriers?—Yes, there is a travelling farriery van, and once a year our veterinary lecturer holds an examination of the pupils who have attended during the year, and he, as a rule, also at the end of each class, gives them two or three lectures on the subject.

6427. That is appreciated by those who attend?—Yes—blacksmiths mostly.

6428. Would you say farmers are beginning to appreciate agricultural education?—Yes, I think they are, but it is only slowly.

6429. (By Lord Barnard.) I see by the last *Annual Report of the Board of Agriculture on the Distribution of Grants for Agricultural Education* that your county was very generous, and spent a considerable sum on agricultural education. Is there any fear of that sum being diminished?—You mean of the County Council's giving a lesser grant?

6430. Yes.—I do not think so. A great part of that grant was given to the Worcestershire Union of Workmen's Clubs and Institutes for horticulture.

6431. Yes. I see that £800 goes exclusively for horticultural education?—Yes.

6432. Of the £250 grants to colleges and schools, £100 goes to the National Fruit and Cider Institute?—That is so.

6433. I suppose the Committee are right in assuming that Worcestershire is mainly an agricultural county?—The greater part of it. In the north-east we go right up to the boundaries of Birmingham, and there there is a very large urban population, but if you cut that corner out, the rest of it is purely agricultural.

6434. I asked the question in order to ascertain whether the lads were induced to go away from the country by the prospect of earning higher wages in mines or towns or anything of that kind, or do they stay in the country districts?—A good many of them go away.

6435. That must rather militate against the success of the scheme of apprenticeships which you have just explained to the Chairman, must it not?—Yes, to some extent it does. I think the railway companies seem to draw the boys more than anything else from the country districts.

6436. I believe you have a very large fruit-growing industry in your district?—We have.

6437. Have you given any attention to forestry at all?—No, not officially by the County Council at all.

6438. Have you any woods there; is it a woodland county at all?—There is a good deal of timber, but there is not much what you may call waste land that would be suitable for putting into forest. Most of the land is too good for the purpose.

6439. The question I was rather leading up to was as to whether it was possible to get labouring men who would be capable of becoming woodmen, but perhaps, as you have not much woodland in Worcestershire it is not worth while putting the question?—I think they would be very difficult to find at present.

6440. I gather you are of opinion from a national point of view the whole question of agricultural education is at present in course of development?—Yes.

6441. In fact, it has only begun in the course of the last ten or 20 years, and therefore we cannot look to any decision come to at present as representing finality or as in the least likely to represent finality?—No; it will have to go on progressing.

6442. Would you agree with me in thinking that the country is now ripe for a rather more elaborate national organisation? I notice in the summary of what you propose to say you suggest with regard to experimental work that "all local experiments should be organised in consultation with the local authorities and correlated by a special staff of the Board of Agriculture." Do you think the existing department of the Board of Agriculture might be extended and organised with perhaps a consultative committee to control, or rather, supervise, the whole of the system of national agricultural education by a central committee?—Yes, I think so. I think, if I may say so, I should rather like to see the Board of Agriculture take up the boys at an earlier age. I think the tendency is to teach them other things rather than agriculture, and if the Board of Agriculture could take them in hand before they leave the elementary schools, and see that they are educated with a bias towards agriculture, it would be a step in the right direction.

6443. I wonder if it is your opinion—it certainly is mine—that the best unit for this purpose would be the administrative county, or, in the case of small counties, a group of counties?—I think, as a rule, the county.

6444. You agree with me, then, that it would be very desirable that each unit should be brought more into touch with, and be subject to, a central body so as to prevent overlapping?—Into touch with, certainly; but I am not quite sure about "subject to." I should like to see each county have their own head to a certain extent, but what they do, I think, should be sifted by the central authority to see whether their results are correct and reliable.

6445. You have not at present in your county an agricultural school?—No.

6446. It would be a costly thing to establish one, I suppose?—We have not started one. I do not think there has been sufficient demand to justify our doing so.

6447. In order that your intelligent boys who are going to take to farming might get the advantage of such a school they would have to go to some other county?—Yes.

6448. You would probably give them scholarships?—Yes, we should. There are certain county grammar schools now which have endowments which are practically being taken care of by the Board of Education, and I should like to see those schools which are purely in country places devoted to agricultural education suitable for farmers' sons who are going to be farmers.

6449. You are well off in the county for schools with endowments?—There are two or three schools with endowments, and I think they should be made good agricultural schools for farmers' sons.

6450. Do farmers' sons attend these schools?—Yes.

6451. We were told that it is very desirable for a boy who is going to be a farmer, presumably a farmer's son, that he should have a sound education at a grammar school first, that he should then go for a year or two to the farm, and then have some specified training afterwards?—I think, if his general education could be kept going alongside of his agricultural education, it would be better. I think he should be kept fond of the land.

6452. Have any of the secondary schools in your county got agricultural sides?—Our county has started several secondary schools, but they are all in the towns, and with regard to secondary education, we agriculturists are being left out in the cold. I should like to see these endowed schools purely agricultural schools.

6453. Similar to the Dauntsey School?—I have not seen that school, but I gather from what I have heard of it that that is the class of school I should like to see.

6454. There must be a considerable number of tradesmen's and professional men's sons. Where are they to get the education?—In the centres of education our county are establishing secondary schools to which they will go.

6455. (*By Mr. Lamont.*) You were for many years Chairman of the Agricultural Sub-Committee of the County Council?—Yes. I gave it up about six months ago.

6456. During that period did you find the County Council pretty considerably alive to the importance of agricultural education?—I can only say this, that I have never asked them to do anything which they have refused. They have always granted me any sum I have asked for for agricultural purposes.

6457. You have not had any particular difficulty in obtaining money for the purposes of agriculture?—No, our County Council have always met me most fairly.

6458. I take it from that that on your County Council you have a good many agriculturists—landlords or agriculturists?—A fair number, but I think agriculturists are in a minority. The other people are reasonable, however, and if a demand is made, and they consider it reasonable, they accede to it.

6459. You have a large number of small fruit farm holders, have you not?—Yes, we are one of the counties that have established small holdings under the County Council, and I think a good many of the landlords, as they get an opportunity, are creating small holdings on their estates, but of course that cannot be done in a day.

6460. Do you find those small farmers are any more alive to the need of agricultural education than the larger farmers?—No, I cannot say that I have found that.

6461. You do not think they would send their sons if there were agricultural secondary schools such as you have described, or perhaps even go themselves for winter courses?—They might, but I think it is very doubtful. I think it is the sons of the larger and moderate-sized farmers who would take advantage of such schools. Some of the more intelligent smaller farmers might send their sons, but I think it would be rather the exception than the rule.

6462. You do not think that the mere fact of there being more men, *ex hypothesi*, with small holdings in a given district, with perhaps the interchange of ideas becoming more general, would lead such subjects to be more discussed among them, and therefore make them more alive

to the need of progress in this direction?—It might in time, but I do not think at the present time there is much demand from the small holder for education, unless he is pushed to it.

6463. You think perhaps there ought to be some incentive?—Yes, I do not think in the natural course of events he would send his son anywhere else beyond the elementary school as a rule, but of course there are exceptions.

6464. I rather agreed with what you were saying as to the conversion of a considerable portion of the endowed grammar schools into purely agricultural secondary schools. You would agree, I take it, that those secondary schools, when established, should in every case be affiliated to the collegiate centre of the district?—Yes, they should lead up to that.

6465. In your case, I suppose it would ultimately be to Birmingham?—It is a question for the future, whether we should affiliate ourselves to Birmingham or start one of our own, but at the present time I think it would probably lead up to Birmingham.

6466. (*By Professor Middle'on.*) With regard to local experiments, you say: "All local experiments should be organised, in consultation with the local authorities and correlated by a special staff of the Board of Agriculture." Do you mean that the results should be correlated, or that the plans for the experiments should be?—The one would follow the other. "Local authorities" is perhaps a little bit misleading—I do not mean to confine it to the County Councils.

6467. You mean someone acting in the county for the local authority?—Yes, or where there is a college where they carry on experiments.

6468. In your particular case—I am speaking of Worcestershire—how would you propose to co-operate with any special staff of the Board of Agriculture? Have you any special member of the staff or lecturer?—We have been carrying out experiments in the winter in the spraying of fruit trees and so on, and this, I think, should come before the Board of Agriculture, who could judge of the benefit of it, and who should be able to check the results, and, if necessary, have the experiments repeated next year and see whether they are correct.

6469. You have done that work with the help of a special agent whom you engaged?—Yes, with this particular money which was left for agricultural education; it is not given out of the County fund.

6470. Is there any other type of agricultural experiment that you have been carrying on apart from that which is conducted by the Union of Clubs?—No, not apart from that. Some years ago we carried out several manure experiments, but they were more object-lessons for the ordinary farmers than anything else, and they did not come to much.

6471. Who organised that?—The County Council.

6472. Can you give us any idea as to how many have adopted the apprenticeship system that you mentioned in any particular year?—Perhaps we get 20 or 30 in a year—some of them for sheep-shearing, although that has rather died out now, and pruning and grafting and hop drying.

6473. Have you encouraged young labourers to attend classes?—There are a few classes, but they are not very popular. I am afraid it will take a great deal of encouragement to make them go. It is a great pity, but some of the boys who come from the elementary schools cannot even sign their own names; I have frequently come across that.

6474. (*By Lord Barnard.*) Are you one of the Board's Agricultural Correspondents?—I am.

6475. Do you consider the system is of very much value?—I think I have had only one application from a man who thought he was ill-used by railway rates.

6476. (*By Lord More'on.*) Are there any others in your county besides yourself?—I am not quite sure.

6477. You do not know who they are?—No.

6478. You yourself, one of the correspondents, are unable to say who the others are?—Yes.

6479. Do you think the services of the Board of Agriculture Correspondents could be made of use in connection with agricultural education—perhaps you have not thought of that subject?—I do not think I have. The difficulty I have is to find time for all these things.

Mr. E. V. V.
Wheeler.

5 June, 1907.

LIBRARY

FOURTEENTH DAY.

Thursday, 6th June, 1907.

PRESENT :

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

Lord MORETON.

Mr. DAVID DAVIES, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. P. P. PENNANT, M.A., called and examined.

Mr. P. P. Pennant. 6480. (*By the Chairman.*) You are a member of the Council of the University College of North Wales at Bangor?—I am.

6 June, 1907. 6481. The first instruction at that College was given at Anglesey?—It was.

6482a 6482. Perhaps you will give the Committee the history of the origin of the first instruction in agriculture by the College?—Some of the Anglesey land owners and farmers, I should say principally farmers, thought that they would like, if possible, to derive benefit from the North Wales College which they had done a great deal in founding, only the agriculturists found that it did not do them very much good from their point of view, and they got hold of Professor Dobbie, who was, at that time, professor of chemistry in Bangor, and got him to deliver lectures and carry out experiments on soils and manures. That was in the year 1885, and that really was the beginning of agricultural work in connection with the University College. That was continued in the following year, and I think it was in the following year or the year after that there was something done in Montgomeryshire of the same character. About the same time or rather later—it began in 1887, so that would be two years later—instruction in dairy work began to be talked about in Flintshire and Denbighshire. It so happened that the daughters of one or two farmers in the district had been to the Worleston dairy school in Cheshire, and when they came home their fathers were a good deal struck with the improvement that had taken place in their knowledge and practice of dairying, and there was a good deal of talk about it. I knew some of these farmers, and it was said why should not we start a dairy school of our own, and I brought the matter before the Flintshire and Denbighshire Agricultural Society, which is a society for the purpose of holding an annual show. I brought it before their executive committee, and we talked the matter over. Then I proposed to them that we should have meetings in certain centres, Denbigh, Mold and Wrexham, and invite Dr. Dobbie over to assist us in carrying out our plan. Then the farmers seemed anxious that a dairy school should be started, and eventually we agreed to form a limited company which should carry on this dairy school, and Mr. Ralli gave us a grant of £300 which was a great help towards the matter, and we started a limited company, and so the dairy school at Llewenni was established. That is running still, and it has done a very great deal of good work in fact. At first, when we opened it, we merely gave instruction at the school, but after two or three years we thought we would advertise ourselves by giving demonstrations in different centres in the country, and we took a travelling dairy round, and we had this travelling dairy for a week at each place at four different places. We took pupils there. First of all we began the week with demonstrations. Then later on we allowed a certain number to receive instruction, and then had a competition at the end, and then at the end of the week after the competition we gave what may be called scholarships to the dairy school for those who took prizes at these places. They were very successful, for I think there were 605 that paid fees and were pupils at this travelling dairy.

6483. In what year was that?—In 1892 that would be.

6484. 605 in one year?—Yes, in one year; that was at these travelling dairies. Then the dairy school itself opened on the 1st of May and was carried on till the 1st of September. We carried it on under the general superintendence of the newly formed agricultural department of the University College.

6485. When was that department formed?—I ought to go back a little bit; in fact, I intended to go back. A general sign of anxiety that something should be done for agriculture by the University College was shown in Anglesey as I said, and then in Montgomeryshire also, and by the dairy work that was being carried out in Flintshire and Denbighshire. In 1889 a grant was made by Parliament to the Privy Council of £5,000 for the purpose of promoting agricultural education, and the North Wales College had a grant of £200 from them. As soon as they received that £200 they at once proceeded to raise subscriptions to supplement that £200, and to form a definite agricultural department for the College.

6486. That was, I think, the first agricultural department which was started in England at a university college?—It was, and that was started at the beginning of the following year, that would be 1890; it arranged for work both in the college and out of the college. I will not say anything about the in-college work because Prof. Winter is here, and he of course can speak very much better as to that, but the out-college work consisted of looking after and assisting those dairy schools such as the one I have related the foundation of, and also extension lectures outside and field experiments. That was the principal part of the out-college work. As I said before, this department was founded in 1890. The Bill for the County Councils I think was 1889. They had just come into existence, and in 1891, that is to say when the department was just one year old, we had a conference at Bangor between members of the college and representatives from the county councils of North Wales. There was another point that I ought to mention. Just before the conference the county councils had received a grant of what I think is commonly called the "whisky money" for the promotion of technical and higher education. In Flintshire we had had the matter before the County Council and the new Welsh Intermediate Act had just been passed, and we agreed in Flintshire that we would devote three-quarters of our "whisky money" to the new secondary schools which were about to be founded and that of the remainder a certain portion should be devoted to agriculture. At Bangor, at this conference, I related what had happened and what had been decided on in Flintshire, and the conference unanimously passed a resolution recommending the other counties to follow the Flintshire example and devote a portion of the "whisky money" to agriculture under the direction of the University College, and thereupon grants were made by the county councils to the agricultural department at Bangor, and the county councils thereupon took over the dairy school at Llewenni which has since that date been not under the limited company which was formed originally, but under the direction of Bangor, with a grant from Flintshire and Denbighshire to carry it on.

6487. It ceased to be a limited liability company?—Yes, we handed it over; they bought our plant; the

*Mr. P. P.
Pennant.*

6 June, 1907.

6487a plant belongs to the county councils and they are responsible for carrying it on all the time under the Agricultural Department at Bangor. The result of that conference that I spoke of was to put the Agricultural Department into the position it is now, which is receiving grants from several county councils and the work being carried out at the college by the college authorities, and in the several counties by committees, half the members of which are appointed by the college and half by the county interested. That is the way in which the work of the department is administered outside.

6488. Their grants for agriculture are given by the various counties to the agricultural department of the college which administers those grants?—Yes.

6489. Through those committees?—And they administer it through the committees.

6490. That dairy school at Lleweni is a dairy school under the control and supervision of the Agricultural Department of the College?—It is, but it is actually administered by the committees of Flintshire and Denbighshire. I mean the actual administration is carried out by the committees of Flintshire and Denbighshire; those committees being formed in this way, half the members are appointed by the county councils and half by the University College.

6491. The committee receive the grants that are made to the college for agricultural education?—They do.

6492. Therefore one may say that the agricultural committee controls the agricultural education in the county?—It does.

6493. You have some personal experience of the outside work of the college?—Yes, I have attended several of the courses of extension lectures and so I know the persons who come to hear the lectures and the character of the lectures and also of the interest that is taken in them. I find that the best farmers in the district come and take considerable interest in the lectures and after the lecture they ask questions and thoroughly cross-examine the lecturer on points connected with the subject in hand and I mix with the farmers a good deal and I know that they are extremely pleased with these lectures and more particularly when they bear on something of which field experiments in the neighbourhood have been a sort of illustration. If I might venture to say so, I think that perhaps the two most successful lectures that I have heard were on basic slag experiments on grass land, when the lecture was delivered on the spot, and the blackboard was the grass field in front. There was one of those on my own land, and that drew a good number; and in another case we took a field for the experiment, which was at the junction of four railways. There was a station adjoining it, and there were crowds came to that, and it was a most satisfactory and most successful experiment, and it was particularly so because it was a field that had been thoroughly neglected for years, and therefore you were able to see the result. There was no previous manuring that interfered with the experiments in any kind of way.

6494. Do the lecturers belong to the staff of the college?—They do; they belong to the staff of the college, and they are sent round. There is just one observation that I should like to make about that. Our lecturers leave us too often. The reason of that is, I think, that the North Wales college has rather a good reputation, so that a lecturer who comes from our college is rather in demand—perhaps, as they say, I say it as should not, —but they do get tempted away, and there is no doubt about it that we are not able to keep them on the spot, and I regret to say that we are too often asked to give testimonials for our own officials to go off to such places as Newcastle or Leeds, or some of those other colleges.

6495. The salaries are inadequate, and do not induce them to remain with you?—Yes, the salaries are too inadequate to induce them to remain; that is the real fact. Now, with regard to the dairy work, I should like to mention this, because it speaks for itself. I think in 1893 the Royal Agricultural Society came to Chester, and of course coming to a dairying part of the country there were a good many competitions and prizes given, and so forth; and in the dairying competitions, taking all the names of the persons, prize takers or commended, just over one-half came from the Lleweni school. We thought that was a great feather in our caps, because there was the Worleston school in Cheshire, which was

older than ours. However, just over the half had been through our school, so that I think it showed that we were doing a certain amount of good work.

6496. You have also a forestry department?—Yes, we have. I have not had much to do with the forestry department, and so I think I will leave that for Professor Winter to speak about. I have been more concerned with the agricultural department.

6497. Do the farmers consult the agricultural department?—Oh dear, yes. They do, and numbers of them come to visit the agricultural farm. At first we had no farm, but after a short time we found that a farm was a necessity, and a great number of persons visit there. Of course, a farm of that sort is to a certain extent an experimental one. The stock experiments are viewed to a certain extent.

6498. How large is the farm?—I think the farm is 600 acres, but half of it is sheep walk; it is not far from Bangor. It slopes down to the sea; a good bit of mountain land comes in; it is about half, I think.

6499. Do you grow any fruit trees on the farm?—I do not think there has been anything of that sort done—however, Professor Winter lives there, and he can tell you better about that.

6500. Are the students resident at the college?—Yes, there are students permanently there taking the regular course, who attend the agriculture, and then there are short course students who attend there just for a short time, taking the agricultural part of it only.

6501. Does the college provide accommodation for the students?—No, they live in lodgings entirely.

6502. Are any of them living on the farm?—No.

6503. Do they work on the farm?—Yes, certainly they assist in the daily operations. The King is to lay the foundation stone of the new buildings of the college on the 9th of next month; we are in temporary buildings altogether at present.

6504. Is there a horticultural department?—No, there is not; our means are very limited, and I think it is a wonder that we have done as much as we have.

6505. Are the students at the dairy schools mostly women?—Almost entirely women, not absolutely.

6506. You say that the interest the farmers take in agricultural education is very marked?—Very marked indeed, and has been very growing. At first I should say that the bulk of the farmers—but that is almost a generation ago—would say that a man of books could not teach them much at all; they had that sort of feeling, but now it is quite different; they enter with the greatest interest into the experiments and the lectures, and they greedily run after the leaflets explaining them.

6507. You disseminate leaflets and reports of experiments?—We do. The experiments are all explained in leaflets. We find that that is the best way—just to have them in leaflets and not in a big book bound up containing them all. Each separate experiment is put on to a leaflet—each field experiment we will say—so that it is not too long to read, and those who want one subject are able to get it without being bothered with what they do not want.

6508. The experiment is repeated in subsequent years?—Yes.

6509. The experiment is not limited to one year?—No, certainly not.

6510. Do you do anything in the way of horse shoeing?—I do not know what they may teach exactly; they may or may not teach that. I have no doubt that the students are instructed, but I do not think we have had any outside teaching in horse shoeing.

6511. And book-keeping?—Yes, book-keeping, certainly.

6512. I suppose the farm book-keeping is carefully observed?—Yes, most carefully.

6513. Is there any cattle breeding at the farm?—Yes, there is a good deal done in the way of encouraging the black cattle breeding.

6514. You have sheep on the farm?—Yes, and a considerable number of experiments of cross-breeding are carried on, but more particularly with the Welsh sheep with different kinds of rams.

6515. And poultry is kept at the farm?—Yes.

6516. If you had more money to spend, in what direction do you think more money ought to be spent?—

Mr. P. P.
Pennant.
6 June, 1907.

I think in the first place more money ought to be spent so that we might, when we had got a good man, be able to keep him; that I think is the most important way of spending the money.

6517. (*By Lord Barnard.*) Would you tell the Committee whether the Agricultural Department is separate and distinct from the rest of the college, or is it administered by the same body?—It is part and parcel of the college—certainly the financial part has to be kept separate.

6518. The accounts are kept quite separately?—Yes, the officers, the principal and professors of agriculture administer their own departments, but still they are under the supervision of the Senate.

6519. The sources from which you derive your revenue then are the Government grant, some fees of students, the County Council grants, and at one time you say you had some subscriptions. Are they still going on?—There are a few subscriptions, but when the County Council took the matter over, then the subscriptions partly disappeared. People said if they paid in one form it was not necessary for them to pay in another.

6520. How many Councils support this department?—Anglesey, Carnarvon, Denbighshire, Flintshire and part of Montgomeryshire.

6521. Is the attitude of those County Councils favourable to the department still?—Yes, certainly.

6522. They show no disposition to reduce their grants?—No. Take Flintshire, for instance, a considerable portion of that county is industrial and not agricultural, and there is, I might say, almost a perpetual discussion as to whether more ought not to be given to technical education and less to agriculture, and so on, but still we always carry the day in favour of giving a fair proportion to agriculture.

6523. In your opinion is there any risk if increased financial assistance were given by the Government of the County Councils reducing their grants?—No, not in the least. I think we should be able to use it rather as a powerful argument for an increase.

6524. I suppose you would agree with me in this, I had a similar experience to yours in the North of England with regard to the changing of teachers, that the whole system of agricultural education, not only at home but even abroad, is in course of rapid development?—Certainly.

6525. Perhaps that is one of the causes why teachers go away so frequently?—Yes.

6526. They are able to get better appointments elsewhere?—Yes.

6527. Do any of your teachers go abroad—to the Colonies?—Yes, some of our teachers certainly have gone abroad.

6528. We have found it so in our district that they do go abroad?—You do not mean to get a better place, do you?

6529. Yes.—We have not lost any in that way.

6530. You say that half the Committee which administers this department is appointed by the College?—Yes.

6531. Is that by the Council of the College—is it a Council?—Yes.

6532. Are any other members of the staff *ex-officio* members of the Agricultural Committee—I suppose the Principal is of course?—Are you speaking of the County Committees?

6533. No, I am speaking of the Committee, or whatever it is termed, which administers this Agricultural Department; I think you told us it consisted partly of representatives of the County Councils and partly of members appointed by the College?—I was speaking of the County Administrative Committees; they are formed in each County; half are appointed by the college and half are appointed by the County Councils.

6534. I will give you an actual instance of what I mean. Who appoints the staff when there is a vacancy, for instance?—The Council of the College would appoint the staff; the Council of the College of course is appointed by the Counties to a large extent.

6535. You have told us that farmers look with growing favour upon the institution as a whole?—Yes.

6536. In fact the department is not only an institution for instructing students, but it is very largely for disseminating improved information?—Yes.

6537. It is an Agricultural Information Bureau, you might almost say?—Yes.

6538. I assume the farm and the stock on it are probably typical of the district?—Yes.

6539. The Chairman asked you about fruit growing. I wondered whether fruit growing was an industry in the district?—No.

6540. I suppose it is principally sheep and cattle?—Yes. There is very little fruit grown. Our climate is not tip-top for fruit growing, particularly near the sea.

6541. (*By Lord Moreton.*) You told us just now that the attendance of the farmers at your lectures is most satisfactory. Do you find that the younger men, the farmers' sons, who are not actually in possession of a farm, but will, possibly, be some day attend well?—They do.

6542. To go back to the question that was asked you just now about farriery, I do not know whether it was to be confined to the college or only to the County Council work. Of course, you know the work of the County Council. Would you mind telling us if there have been any lectures on farriery in the district, not necessarily in connection with the college?—I could not tell you, but it is a subject on which, if it was asked for, it could be given.

6543. Apparently, as I gather from you, there is no very great interest taken in it?—No, I have not come across any.

6544. You are aware that in many parts of England considerable work is done on those lines?—Yes, and I think it is coming into our district, because we had some demonstrations of that kind at some of our local shows, and people seem to be beginning to take interest in it.

6545. As regards forestry and book-keeping and such subjects, I take it you would rather we questioned Professor Winter on those?—Yes.

6546. (*By Mr. Latham.*) I think you said when you first began talking about agricultural education in Wales that the farmers took very strong objections to it?—No. I think it was rather that they shrugged their shoulders at a man from Bangor coming to teach them anything.

6547. Possibly they were a bit older than their teachers?—Yes, very likely.

6548. Is that a fair illustration of the reason?—I have no doubt it would be operative.

6549. Then you said after the dairy schools began to be successful that farmers began to be intelligent and to think that there was a little more in it?—Yes.

6550. Was it simply and solely from your dairy teaching?—There is no doubt the dairy teaching had a good influence, not merely on dairying, but all round.

6551. You are not at all alone in that sort of thing. That showed the farmers that there was something to be done from enlightenment, and they were willing to receive it?—Yes.

6552. You spoke of the agricultural societies doing a great deal in the matter. Did they institute dairy schools and start them on their own account in connection with their agricultural societies?—The dairy school grew into existence in the way I have mentioned: there is no doubt it was the daughters of the farmers, then the farmers, and then some of the landowners. That was the way it grew, but it came from the dairy school in our centre; it was started in that way.

6553. You spoke of about 605 students paying fees, were they all dairy students?—Yes, of course they paid a fee, and the bulk of them merely saw demonstrations. Some of the likely young women received actual instruction of a little more elaborate character, and then we had a competition and gave a scholarship to two or three, which carried them to the dairy school at Llewenni for a six weeks' course.

6554. The 605 students could not have been accommodated in 12 months?—No, of the 605 perhaps some only came for one morning, but that was the number who actually paid.

6555. Then naturally their fees would be very small?—Yes, but that is the number who actually paid to come and see the demonstrations: we did not allow anybody to come who did not pay something.

6556. I quite understand. You gave us the number of 605 students to show the great interest that was taken in the work?—Yes; we got a national school, or some place of that kind in a village and held it there.

6557. My experience is that there have been a great

many lookers-on; but I have never heard of them being asked to pay before?—If they will pay something, it necessarily shows that they take a real interest in it.

6558. It practically comes to this, that the Agricultural Department was started by private enterprise?—Yes.

6559. Was it done by means of any charity?—No, it was for the promotion of agriculture.

6560. We have had evidence given in this room that people have left money in their wills for agriculture, and I am rather anxious to know whether this was done in that way or whether it was done by subscriptions from the leading men of the district. What was the private enterprise?—It was by landowners. The subscriptions to the college, which amounted to about £700 annually for a certain number of years; private subscriptions were almost entirely by landowners.

6561. Landowners subscribed for the benefit of their tenants, I presume?—Yes.

6562. You spoke of improvement in the grass land—or perhaps that question had better be left for Professor Winter?—Of course, we are very much a grass country now, although I can remember when much more than half, I might say, that is now in grass was tillage.

6563. For the size of it is this farm a prosperous one?—Yes. Of course, the farm is not conducted quite in the same way as a farm for profit would be, because it has to be a farm illustrating experiments, so that you must not expect to make a big profit. It pays its way, however, and if a farm that is all given up to experiments does that I think that shows it is a very successful one.

6564. (*By the Chairman.*) Do you pay rent for the farm?—Yes.

6565. (*By Mr. Latham.*) If you answer the question by saying you have no losses I think that covers it?—Yes.

6566. From the report of the Board of Agriculture I see your present stock consists of about 90 head of cattle, 1,600 sheep and lambs, and 18 horses. Is that so?—Professor Winter is the head of the farm, and he can give you those figures more accurately than I can.

6567. Perhaps he can tell us about the improvements also better than you can?—Yes; I live 40 miles from the farm, so I am only occasionally there.

6568. You spoke of the conference between the college and the representatives of the County Councils in 1891 resulting in arrangements for finance and administration which have secured the success of the department. I think Lord Barnard asked you if there was more money coming from outside, whether you had not some little doubt about the County Councils keeping up their grants, and I was rather surprised you answered so confidently?—I look upon Anglesey, Carnarvon and Denbighshire as much more largely agricultural than Flintshire. Flintshire would be the one where the industrial portion would be most likely to kick; but I think I have a perfect confidence in Flintshire standing fast; and I am sure the others, where the interests in agriculture and the representatives are much stronger, would certainly be able to hold fast.

6569. I think mine is a rather fair question, because in looking at this book of the Board of Agriculture I see your counties do give very little money to the colleges, and I suppose you are the recipients of it?—Anglesea, of course, is a small place. I think they give £150.

6570. Carmarthen gives nothing?—Carnarvon gives £330, Denbighshire £400 and Flintshire £250, and those would be grants about in proportion to their several sizes and the richness of the counties.

6571. How close is the college to Glamorgan?—Glamorgan would be near the Cardiff college—I do not think they have an Agricultural Department there.

6572. They do not take interest enough in yours, at any rate, to contribute to it?—Our work is confined practically to the four counties I have mentioned, and a portion of Montgomeryshire.

6573. Those that do not subscribe to your college have no agricultural education at all?—There is Aberystwyth College, you must remember.

6574. (*By Mr. Davies.*) With regard to the conference which you told us took place between the different counties that are interested in this department, does this conference meet now?—No. This was a conference that was called together in 1891 for the purpose of getting

the County Councils which had just been appointed into touch with the recently formed Department of Agriculture.

6575. Each county makes its own grant irrespective of what the other counties do?—Yes.

6576. With regard to the scholarships, I believe that each County Council does give scholarships to enable the students to go up to the Agricultural Department?—Yes.

6577. Do you think it would be a wise thing if all those scholarships were handed over to the college, and the college distributed them, or do you think that the present system of allocation by the County Councils themselves is preferable?—I think if the County Councils pay for them and decide how many they should send from their counties, that they would like to keep it in their own hands as much as possible, I am sure. I always find that County Councils like to spend their own money as much as possible.

6578. At present is not the system that they give a certain number of scholarships, but there is no examination, and that anybody can apply for scholarships?—Of course there are college scholarships, but the ones which the County Councils give from year to year are dealt with by the administrative committee that is formed partly by the college and partly by the County Council.

6579. In awarding these scholarships is there an examination held, or are they simply given on the recommendation of certain members of the Council?—There is no examination, but the recipients are farmers' sons; they come off the land.

6580. Would not you think it advisable that some sort of test should be held before a scholarship is awarded?—You see, in the first instance, we rather have to drag these scholars to the college; that however is changing rapidly, it is more appreciated now, and more sought after, but I think we have hardly arrived at the period where it will be necessary to have an examination in order to sort out the best candidates.

6581. So that really in fact you have to pay a certain number of students annually to go to the college—it comes to that?—Yes, but then they go home and permeate knowledge.

6582. I think you told the Committee that you consider the lectures which have been delivered in the counties have done a great deal of good?—A very great deal.

6583. Has anything been done in the way of evening classes for farmers' sons and labourers' sons living in certain localities where they could come for a fortnight or three weeks or a month's course preparatory to attending some of the short courses in the college?—No, I do not think anything has been done in that way.

6584. Do you think that is a practical suggestion?—Yes, I think so; you want people who would be willing to take a good deal of trouble on the spot, but I think it is a good idea; it never occurred to me.

6585. With regard to the experiments and demonstration plots, does each county have a plot of its own?—The Committees meet and allocate the money that they have to spend. They say, "This year we will spend so much in field experiments, and so much in extension lectures" and so on; then the college carry that out, and the Committees no doubt say, "John Jones's is a suitable farm, and no doubt he will be very glad to help you by letting you experiment with his turnips" and so on, and the thing is carried out in that kind of way.

6586. You do not have to pay for the use of the land?—No.

6587. You simply pay for manures, and seeds, and so on?—Yes, and if it is a hay experiment, cutting the hay and those sort of things.

6588. I think you told us that the students who go to the farm have no objection to working on the farm?—That is so.

6589. Does the college pay them for the work they do on the farm?—No, they pay them in the instruction they give them.

6590. I believe at a number of colleges abroad they actually pay the students for the work they do on the farms?—Yes.

6591. Does any machinery exist at present whereby the departments at Bangor and Aberystwyth have some means of comparing the experiments, and so on, that are carried on at each of the college farms? Is

Mr. P. P.
Pennant.

6 June, 1907.

Mr. P. P.
Pennant.
6 June, 1907.

there any co-operation between the two departments ?—There is no machinery of that kind in existence. I think the present head of the Agricultural Department at Aberystwyth is an old student from us, and I do not think there would be any difficulty in comparing notes, and, no doubt, it is done to a considerable extent ; but there is no actual machinery in existence.

6592. Do you think it would be advisable if there were, as the problems they have to grapple with are more or less similar ?—Yes, I think it would be ; but certainly we have our hands very full as it is.

6593. You have a forestry course at Bangor, have you not, which does not exist at Aberystwyth ?—Yes.

6594. Do you know that some attempt has been made to establish a similar department at Aberystwyth ?—I do not know about that. As far as I am aware, two grants were made for forestry—one, I think, to Newcastle and the other to Bangor.

6595. Do you think one forestry department is quite sufficient for the needs of North Wales, at any rate, and that the department at Bangor could suffice for many years to come ?—I do not know about that. Of course, there is a great deal of land which could be very advantageously planted in Wales, and I could not say what a forestry department might grow to, but for a beginning what we have is sufficient.

6596. Is there an agricultural library at the college ?—Yes.

6597. Is it a circulating library from which farmers living in the county can get books ?—No, I think it is only used by the students.

6598. Do you think a circulating library at the headquarters of the college, whereby farmers might be able to get agricultural text books very easily, might be of benefit ?—Farmers are not great readers, you know.

6599. But the young men who have left the college and who wanted to keep up their college studies might find that very useful ?—That is so.

6600. Do you find that the farmers in your district are interested in research work ?—The research work is a little above the heads of the ordinary farmers.

6601. Do they realise the value of it ?—Yes, they do, certainly.

6602. They do not object to money being spent in that way by the college ?—I think a certain number would appreciate it, but the average farmer thinks a great deal of practice, and not much of science.

6603. (By Mr. Medd.) Is each affiliated county represented upon the Council of the Agricultural Department ?—They administer their own money in conjunction.

6604. You have a Council or governing body for the Agricultural Department ?—Yes. The Council of the College is appointed—of course there are a certain number of *ex-officio*s—by what is called the County Governing Body. That represents County Councils and original subscribers ; the Council is practically formed in that way.

6605. As a matter of fact each affiliated county has a voice in the organisation and work of your Agricultural Department ?—Yes, certainly.

6606. Could you kindly give the exact amounts contributed by each county. There is a very confusing statement here in the Board of Agriculture report, in which it says : "The County Council grants amounted for the previous year to £1,860, of which, however, a considerable portion had been due for the previous year." Perhaps you would kindly tell us the actual amount given to-day ?—I believe I am correct in saying that last year Anglesey gave £150, Carnarvon £330, Denbighshire £400, Flintshire £250, and Montgomeryshire £70.

6607. Montgomery did give something ?—Yes ; £70, I think.

6608. There is nothing down here for Montgomery. That makes a total of £1,200 ?—Yes.

6609. So that your local contributions are £50 less than the amount you received from the Board of Agriculture ?—Yes. Then there was a certain amount of subscriptions, but I really forget what they would be.

6610. What I may term the permanent local contributions are somewhat lower than the grant you received from the Board of Agriculture ?—We receive from the Board of Agriculture £800 I think.

6611. £800 and £200 and £250—£200 for the farm

and £250 for the forestry, making £1,250 altogether ?—Yes.

6612. Do you find any difficulty arising from the fact that Montgomeryshire is divided, half coming to you and half going to Aberystwyth. Does it make it more difficult to organise Montgomeryshire in any way ?—I should think very likely.

6613. I mention it because Mr. Marshall Dugdale in his evidence before us the other day referred to the difficulty of locomotion, and he suggested it would be preferable if the northern half of Montgomeryshire were affiliated to Aberystwyth and the northern half of Merionethshire went to you. Has that been brought before your Council at all ?—No, it has not.

6614. You will see from the map what I mean ?—I think the Counties settle themselves where they go.

6615. I merely mention it because it was a suggestion to which he drew attention ?—Yes.

6616. Does the Council of the Agricultural Department confer annually with these different counties as to a scheme of agricultural education in each county ?—Yes. We have a meeting at the beginning of the year and decide how money shall be spent.

6617. In each county ?—Yes—at least, I cannot say what happens in Montgomeryshire, but I can speak for the other four counties.

6618. Because at present the amount of agricultural education given in these different counties is very slight from the Report. Would you be prepared to co-operate with the local authorities of the counties in organising a definite scheme of agricultural education from the elementary school up to you as the collegiate centre in each county ?—I think it is the sort of thing we should like to see.

6619. To-day you have no permanent institution for intermediate agricultural education—that is for the son of the small farmer or the labourer—in any county ?—No.

6620. Your work is confined to lectures, and I see occasionally a little charlock spraying, and spraying for potato disease, and so on, but there is nothing permanent, is there ?—It is so far permanent that there is a good deal done every year.

6621. By "nothing permanent" I mean to say that it is only, perhaps, for two or three weeks' lectures, or it may be only a one-day lecture. It is not anything in the nature of a school or continuous course ?—No.

6622. Probably you will agree with me that it is all important that the son of the small farmer and labourer should have effective opportunities for learning ?—Yes, I think it would be extremely desirable.

6623. Of course, it is almost entirely a matter of organisation ?—Yes.

6624. Perhaps you would agree with me in this that if one is to appeal to the Treasury for more grants on behalf of agricultural education, it is essential to provide for these classes that are at present more or less neglected ?—Yes. We have a very good set of intermediate educational schools and I should like to graft agriculture on to those.

6625. Would you think it advisable to have anything of a distinct agricultural nature incorporated with your intermediate schools ?—You must have some sort of organisation and there is one in existence.

6626. Probably you may not have had any experience of what are called winter schools in other countries which are of a permanent character ; they have them in Ireland and they have them in Holland ?—We tried—at least I tried—to get one of our intermediate schools in Flintshire turned into what I may call an agricultural school to a large extent, but it failed from want of money.

6627. Of course it is a question of money ?—Yes.

6628. That, of course, would be of the grade that I am alluding to, and it would be the character of institution that I mean ?—Yes.

6629. Of course, each county could not support such an intermediate school of its own ?—No.

6630. But such an intermediate school could become the intermediate centre for your area ?—Yes. We tried to form those for Flintshire and Denbighshire, but we failed merely for want of money.

6631. The idea is one which commends itself to you ?—Yes ; very much indeed.

6632. And which you would carry out if you had the funds?—Yes.

6633. You have expressed your desire for additional grants?—Yes.

6634. The total number of students in attendance at Aberystwyth last year was only 37?—That is so.

6635. That looks very small before the public. Of course you do other very valuable work; but if you are to press the claims of agricultural education upon the country and obtain larger money, do not you think that you must show that you are educating, either at your centre or at other centres, a very much larger proportion of pupils than 37 as compared with the cost?—Yes.

6636. Probably you will agree with me that that is a point which you must, I think, emphasise before the country?—Yes.

6637. The number here, 37, seems hardly commensurate with the expenditure?—Yes, from that point of view.

6638. (*By the Chairman.*) Do you consider that more should be done and could be done to give agricultural education to the labourers?—Yes.

6639. In what way?—To begin with, I should like to see the elementary schools have much longer holidays and the children going on the land. A child that is kept in school too much when it is at that age, and does not go into the fields and mix with the cattle and so forth never will make an agricultural labourer. For instance, he is afraid, I was going to say, of a bull, but he is afraid of a calf. You may see a child of five or six years old drive half-a-dozen cows, if he has been living on a farm; and that is one of the things that you want with the agricultural labourers' children, if they are to become agricultural labourers when they grow up. They want accustoming—I do not say that it is actual instruction given—but they want to be in the habit of being on the land and mixing with bullocks and cattle and sheep, and so forth, and knowing what animals do, and also seeing operations going on; and then the thing comes much more naturally to them; and I fancy that the Swiss plan of giving longer holidays to the children in the summer time is a very good one. I should like to see that plan adopted more in this country. Then, of course, you can carry on their education by evening schools, and so forth, later on so that in the end they have as much "book learning," as they would call it, and yet at the same time they have their minds instilled more with ideas of agriculture. Then there is another reason, while talking on this subject, why children in school are so anxious to go to the town, and do not turn into good agricultural labourers. That is this: that most schoolmasters are what I call town-bred people; they have not agricultural minds. Their illustrations in their lessons are as to what happens in the towns, the lighting of towns, the grandeur of the shops, and all that kind of thing. The consequence is that the children when they go out and leave school their idea is, "Oh, what a grand place town must be." Now, if more of

our schoolmasters were country-minded individuals, the illustrations in their lessons would be that the cows do this and that, and they would illustrate it by the hay and cutting the corn and all those sort of things; and then, when the children left school, their minds would run upon this class of subjects. I believe there is a great deal in that kind of thing; and I, as far as I have been able to, have always tried at the training colleges that I have had anything to do with to let them take a certain number—I take all the best into the training colleges of course—but to take a certain proportion from the town and a certain proportion from the country, because in a training college what you have got to do is to form a good instruction for youth, and you want a certain number for the country and a certain number for the town, but if you get all the best and sharpest pupils, and they are the pupils who go to the training colleges, from the town you are getting instructors who are suited to teach in the towns, but are really unsuited to teach in the country.

6640. Your view is that the teacher should think agriculturally?—I do. I think it is a thing of the greatest importance; and then it would be so very much more easy to graft a little more agricultural observation on the children.

6641. Do you think that a system of apprenticeships for young farm labourers on farms where some trouble should be taken to give them instruction might be useful?—Yes. Of course, I have seen that done to a slight extent in connection with cheese-making farms where it would be very important, but I have not seen it, I think, beyond a cheese-making farm.

6642. But that could be done?—Yes.

6643. It would obviously be in the interest of farmers to encourage these apprenticeships?—It would. Of course I know a certain number of instances of that description.

6644. Might I ask, supposing there is a deficit in the balance sheet of the Agricultural Department of the College, is the University responsible in that case?—No.

6645. Who is responsible?—We should have, I think, to make an appeal to the County Councils; that would be the only resource.

6646. The County Councils are not responsible?—No.

6647. The University is the responsible body for the Agricultural Department?—They are, yes; but I do not think financially they are responsible. No, I say we should have to appeal to the County Councils. I think that the University College from the financial point of view have taken care that they are not responsible; but Professor Winter can tell you better.

6648. Very well, I will put that question to Professor Winter?—Yes, when the Agricultural Department was formed they were very careful to take care that it should not trench on the funds of the College.

6649. I meant, of course, the College of Bangor, not the University?—Yes, the College of Bangor.

Mr. P. P. Pennant.

6 June, 1907.

Professor THOMAS WINTER, M.A., called and examined.

6650. (*By the Chairman.*) You are Professor of Agriculture at the University College of North Wales at Bangor?—Yes.

6651. How long have you been at the college?—I went there first as an assistant lecturer in the session of 1891-2, and stayed for nearly two years. I was then on the staff of the Yorkshire College for rather less than a year, and went back again to Bangor as head of the Department of Agriculture. That was in 1894, and I have been there ever since.

6652. What do you yourself teach at Bangor?—Agriculture.

6653. Perhaps you will give the Committee an outline of the scheme of agricultural education at the college, both in-college work and out-college work?—The statement I have prepared will, I am afraid, in some respects overlap what you have just had from Mr. Pennant, but

6653a I will run over it as quickly as possible. The agricultural

department of the college had its origin in a course of lectures on agricultural chemistry, with special reference to the chemistry of soils and manures, delivered by Dr. Dobbie, who at that time held the chair of chemistry in the college, in the spring of 1885. The lectures were delivered at the request of the farmers and landowners of Anglesey, who formed a committee to make the arrangements in connection with the course and to provide for the expenses connected therewith. The course was accompanied by an extensive series of experiments on the manuring of swedes. The experiments were conducted on eleven farms in Anglesey and one farm in Carnarvonshire, and the interest excited in them was very considerable. The report on the results was issued in 1886 and was translated into Welsh at the request of the farmers. The experiments were primarily of an educational character, their principal object being to demonstrate the effects of various kinds of manures upon the swede crop.

In the Session 1886-7 Professor Dobbie lectured again

Prof. T. Winter.

Prof. T.
Winter.
6 June, 1907.

at Llangefni on the chemistry of foods and feeding stuffs.

In the course of Session 1888-9 Parliament for the first time voted a sum of £5,000 for the promotion of agricultural education, and placed the money in the hands of the Agricultural Department of the Privy Council for distribution. On the ground that the college had been engaged in the diffusion of agricultural education, and was actually so engaged at that time, a class similar to that held at Llangefni being in progress at Welshpool, application was made to the Privy Council for a share of the grant. An inspector of the Privy Council visited the college and held an inquiry into the work which had been carried out, and in consequence of his report a sum of £200 was granted to the college in November, 1888.

OUTLINE OF SCHEME.

Soon afterwards (January 14th, 1889) Dr. Dobbie submitted to the Council of the College, in the form of a letter addressed to its Chairman, an outline of a scheme for providing a comprehensive system of agricultural education for North Wales in connection with the University College at Bangor. This scheme met with the approval of the Council, and an influential committee was appointed to take the necessary steps to carry it into effect.

The object of the scheme was two-fold :—

- I. In-college instruction, embracing a systematic course of study in agriculture and the several sciences upon which it is based.
- II. Out-college work :—
 - (a) Dairy work, in three fixed dairy schools and in travelling dairies.
 - (b) Extension lectures to farmers.
 - (c) Field experiments.
 - (d) Classes for elementary schoolmasters.

In order to carry the scheme into effect—

(A) Public meetings were held throughout North Wales for the purpose of explaining its provisions and eliciting the opinions of farmers.

(B) A large number of the newspapers circulated in North Wales were induced to take an interest in the movement, and published leading articles in support of it.

(C) A considerable number of landowners and public men were visited by members of the committee for the purpose of explaining to them fully the aims of the college and the methods proposed. In this way much information as to the requirements of different parts of North Wales was obtained and many valuable hints were received.

6653b FAVOURABLE RECEPTION BY THE AGRICULTURAL POPULATION.

To this appeal all classes responded heartily.

(A) Landowners promised subscriptions, which in 1888-9 already amounted to £500 per annum, and subsequently increased to £750. Many of them also supported one or other of the dairy schools and gave land and labour free for experiments.

(B) The farmers subscribed liberally to the dairy schools. In the original list of the Anglesey and Carnarvonshire Dairy School, farmers formed the great majority of the shareholders. They contributed also to the local expenses and many supplied land and labour free for experiments.

6653c No better evidence of the general interest felt in the movement could be given than the fact that in a single year, in addition to the large sums subscribed directly to the agricultural fund of the college, money was also found for the establishment of three dairy schools at such widely different centres as Denbigh, Welshpool and Bangor.

(N.B.—Mr. Ralli, of Rhyl, had already provided £300 for this work in Denbigh before the college began to organise the dairy schools.)

6653d In the same Session the scheme was so far worked out that courses of lectures were given at Wrexham, Bala, Welshpool, and Pwllheli; field experiments started in

Montgomeryshire and Carnarvonshire, and the first class for elementary teachers held at Bangor. The progress was considered so satisfactory by the Privy Council that the grant was doubled for the following year.

1889-90. At the beginning of this Session special lecturers were appointed to lecture on agriculture and other subjects, and an in-college course of instruction was also instituted.

In the course of the Session the out-college work was also extended in all branches.

6653e CONNECTION OF THE AGRICULTURAL DEPARTMENT OF THE COLLEGE WITH THE BOARD OF AGRICULTURE.

In the year 1889-90 a deputation of representatives of the college, headed by the late Earl of Powis, then President of the college, was received by Lord Cranbrook at the Privy Council office in order that they might lay before the President of the Privy Council an outline of their scheme for agricultural education. The President assured the deputation of his sympathy, but before the close of the year the duties of the Agricultural Department of the Privy Council were transferred to the new Board of Agriculture.

At the request of Major Craigie, head of the Statistical Department of the Board of Agriculture, a statement was prepared by Dr. Dobbie showing how far the college scheme was then in operation and what developments were aimed at in the future. The Board of Agriculture approved the scheme and recommended it as a model for similar work at other collegiate centres.

The connection between the Board of Agriculture and the college has doubtless tended to inspire confidence in the agricultural population.

6653f CONNECTION OF THE AGRICULTURAL DEPARTMENT OF THE COLLEGE WITH THE COUNTY COUNCILS.

With the establishment of the County Council system, which was not in operation at the time that our agricultural work was begun, it was felt that the department might reasonably expect considerable assistance from the Councils in carrying on its extension work.

The Carnarvonshire County Council was the first to associate itself with the scheme (June, 1891.)

A report was issued by the Joint Education Committee of the County Council, based on the evidence given before the Committee by a member of the College Council and Dr. Dobbie. In this report attention was drawn to the powers which local authorities possessed under the Technical Instruction Act for dealing with agricultural education, and recommendations were made as to the best methods of utilising the College organisation.

The County Council adopted the report and voted a sum of £250 a year for the work. This grant has since been increased to £330.

Since then the different County Councils of North Wales have agreed to co-operate with the College, more or less on the same lines as Carnarvonshire.

PROGRESS OF THE WORK.

I.—IN-COLLEGE.

6653g Five in-college courses have been arranged to meet the requirements of different students :—

(1) Course qualifying for the degree of B.Sc. in Agriculture in the University of Wales. This course extends over three years subsequent to matriculation. At the end of the first year students take the intermediate examination in physics, chemistry and botany or zoology. In the final examination at the end of the third year agriculture is taken along with two pure science subjects.

(2) The Diploma course, which extends over two years and is intended for farmers and land agents.

(3) Course for students of the Day Training Department who remain at the College for a third year and who intend to teach in rural elementary schools.

(4) A short course of eleven weeks during the autumn term, intended for farmers' sons who are only able to leave the farms for short periods during the autumn and winter seasons.

(5) A course in forestry extending over one year.

6653½ The average number of students in the Department for the last twelve years has been 34. During the present session there have been 35.

About one-half of these students have been short-course students, not many of whom are under 20 years of age, and some of whom are usually over 30. Nearly all of them are sons of farmers. Several of them come up for second courses, and in nearly every case they return to the farms. Many of them come up badly prepared, but as they are serious students, they usually make rapid progress. During the sixteen years that I have been engaged in agricultural teaching, no work that I have done has given me greater satisfaction than the teaching of these short-course students.

6653; Few elementary teachers have taken advantage of the course provided for teachers in rural schools. It must be remembered, however, that teachers in town schools command higher salaries than those obtainable in the country districts, and until the teaching in rural schools is arranged on different lines there is not likely to be much demand for such a course as we have provided.

Of those who have taken our longer courses many have obtained good appointments, both in this country and abroad. A number are engaged in teaching and lecturing, some in land agency, and the rest have become farmers.

The numbers attending the in-college courses have on the whole been rather disappointing. Possibly they might have been greater had we spent more money in advertising. As our income has never been sufficient for our needs, we practically ceased to advertise 10 years ago, and for the last seven years no money has been spent in advertising the department.

6653; Although we have not for some years had any increase in numbers, signs of encouragement are not wanting. For many years nearly every student who came to the department did so as the result of canvassing in some form or other. Canvassing is no longer necessary, and I have little doubt that in the future our numbers will increase. Several farmers have told me during the past year that they were going to send their sons to college; not long ago an invitation would probably have failed to bring them. A great number of farmers in North Wales are what may be termed working farmers, and in cases where a farmer's son attends the college an extra man has to be employed on the farm.

II.—OUT-COLLEGE.

6653k *Dairy Work.*—As no public funds were available, the dairy work in connection with the college was at first carried out by three limited companies founded at Sylfaen, near Welshpool, in Montgomeryshire; Lleweni Hall, near Denbigh; and at Bangor. The capital of these companies was subscribed by landowners, farmers and others who were interested in the work. At Sylfaen nearly £700 was paid up, at Bangor £430. I have not the exact figures for Lleweni, but I think the capital subscribed was about £500.

At Sylfaen and Lleweni both buttermaking and cheesemaking were taught, at Bangor buttermaking only.

For the first two years pupils were received at the schools for periods of six weeks, but in 1891 outside demonstrations were given, and in the following year classes for the instruction of pupils were arranged at local centres, each class extending over 10 days.

For some years the local dairy classes were held during the early part of every summer, and during the latter part the best pupils were drafted from the local centres to the fixed schools for further instruction.

Owing to lack of funds, the school at Sylfaen was given up in 1896, and since 1901 no work has been done in connection with the Bangor school, and no outside classes have been held in connection with Lleweni, which is now the only dairy school worked by the college.

At Lleweni over 900 pupils have passed through the school, at Sylfaen 124, and at Bangor 202. The average period of instruction at Lleweni and Sylfaen would not be less than six weeks; at Bangor, where buttermaking alone was taught, the pupils did not remain on the average for more than three weeks.

Between 1892 and 1901, 133 Dairy classes were held at local centres, at which 1,674 pupils received instruction for a period of ten days. I do not refer to spectators. These were actually working pupils.

The school at Lleweni is still in a flourishing condition and much more work might be done there if funds were available. At one period a number of pupils came to the school from England with a view of obtaining instruction qualifying them for teaching appointments. We have now ceased to cater for this class and those who attend the school are almost without exception the daughters of farmers in the neighbouring counties.

There has on the whole been more demand for dairy work in Denbighshire and Flintshire than in other parts of North Wales. In parts of those counties cheesemaking is carried on to a great extent and improvement in the manufacture of cheese is always followed by an increase in price. In Anglesey and Carnarvonshire, although in some cases pupils of the School obtain better prices for their butter, in a great many cases they do not. Montgomeryshire is not a typical dairy county, but signs are not wanting that the closing of the Welshpool School has been a loss to the district. In a letter which I received from the Chairman of the Montgomeryshire County Council a short time ago he states that "if funds were provided the establishment of a dairy school under the management of the University College of North Wales would be of great benefit to Montgomeryshire."

With regard to the dairy work generally, there can be little doubt that the teaching given has not only resulted in an improvement in the dairy produce, but also has brought about marked changes in dairy management and in the sanitary conditions under which dairy work is carried on. As, however, inferior butter practically makes the same price as good in some of the local markets, and as local butter always makes a much higher price than foreign or creamery butters, especially in Anglesey and Carnarvonshire, a great many farmers see no reason for making a change in their methods. We happen to have some very good butter markets, and the majority of the people prefer the local butter, which usually makes from 3d. to 6d. a pound more than any creamery or foreign butter that comes there.

6654. Are there any creameries in any of the counties? —No.

6655. Why is that?—Because the people can make a better price for their stuff as it is. During the last year or two the tendency has been for the local butter to fall in price, and I have little doubt that in the near future there will be an increasing demand for dairy instruction. Local butter has been coming down in price, while the imported butter is holding its own. I suppose that people are gradually getting accustomed to the creamery or foreign butter. The prices of the two articles are coming closer together.

6656. (*By Mr. Latham.*) I thought you said just now that the local butter made the most money, even if it was not the best?—It does.

6657. Teaching really will not have much to do with that?—No, but the price of local butter is coming down; I suppose it is owing to change of taste. I can tell by our own butter at the farm; we can always get far more for our butter than is paid by imported butters. Butter in Bangor last week was about 1s. 3d. to 1s. 4d., and you can buy these creamery butters, and the Irish butters at 1s. I have known the local butters making 6d. a lb. more, but we do not get that now; the prices of the two articles are closer together.

6658. Is that because of a feeling that it is made by native labour?—No I do not think that is the reason; it is a highly salted butter and of a peculiar flavour, and it is a butter that perhaps will go further.

6659. The taste of the Welsh people must be educated before they will eat the other butter?—Perhaps that is so.

Extension Lectures.—Extension lectures on agricultural subjects (*list of subjects handed in*) have been given in all parts of North Wales. In the Welsh-speaking districts these lectures have been almost entirely in Welsh.

That the lectures have been appreciated is shown by the fact that they create even greater interest to-day, and are attended by even better and more representative audiences than was the case when they were started eighteen years ago. During the present Session we have only been able to give about half the lectures for which we received applications.

During the eighteen years in which the department has been in full working order 111 lectures in agriculture have on the average been delivered every year, with an average attendance of 39. During the present college

Prof. T.
Winter.

6 June, 1907.

Prof. T. Winter. year 117 such lectures have been given, with an average attendance of 46.

June, 1907. Most of these lectures have been delivered in small villages in thinly populated districts, situated in some cases as much as fifteen miles from a railway station.

Usually four lectures are given at each centre.

Such subjects have been dealt with in the lectures as the cultivation and manuring of soils, farm crops, foods and feeding, the breeding and management of live stock, the laying down and management of pastures, dairying, diseases of crops and insect attacks, poultry keeping, cultivation of vegetables in cottage and market gardens.

6659b From time to time efforts have been made to induce farmers to co-operate, and for the last four years agricultural co-operation has been one of the subjects on which lectures have been given. I have no hesitation in saying that it is almost entirely owing to these lectures that agricultural co-operation societies are now springing up all over North Wales.

6659c In connection with the extension lectures small libraries of books dealing with the subjects of the lectures have been formed. They are sent to the local secretaries at the different centres, who distribute them among the members of the local classes and are responsible for their safe return.

6659d *Field Experiments.*—Since the first field experiments were carried out by the College in 1884, experiments have been made at some 500 different centres in North Wales. For some years the experiments were confined to the manuring of field crops, varying in character from mountain pasture at 1,000 feet above sea-level to the ordinary cultivated field and garden crops in the low country.

From time to time fresh subjects have been dealt with, such as the laying down of grass land, seeding of corn, growth of new varieties of plants, destruction of weeds in corn crops, prevention of potato disease, and effect of change of seed on crops.

From the outset every effort has been made to make the experiments suit the requirements of the different districts, and as farmers do not, as a rule, care for long reports, the results of the experiments have been summed up in as few words as possible, and issued in the form of leaflets.

6659e There can be no two opinions that since the foundation of the department at Bangor there have been great alterations in the farm practices of North Wales. For example, the practice of manuring may be said to have undergone a complete change. Manures are now freely used which were then practically unknown, and, generally speaking, farmers have a much better idea what manures to use and the quantities to apply than they had some years ago. It is interesting to recall the fact that the College was the first public institution to carry out experiments with basic slag. At that time probably not five per cent. of our farmers had ever heard of it. If I say that 20,000 tons of basic slag are now applied every year in North Wales I shall not be overstating the case.

Fifteen years ago the majority of farmers in many parts of North Wales seeded their land with seeds from the hay-loft. Although the practice has not entirely been given up, the great majority now make a point of purchasing good, well-cleaned seeds.

With regard to seed generally, it may be stated that the old belief that what was not good enough to sell would do for seed now finds no favour.

It is always easier to note effects than to determine their causes. There is, however, sufficient evidence to show that those in North Wales who are best able to form opinions on the subject hold that the College has at least played a conspicuous part in bringing about whatever changes have occurred.

6659f *Classes for Elementary Schoolmasters.*—The scheme drawn up by the college in the first instance included instruction for elementary teachers. During the years 1888-1893 classes were held at Bangor, Blaenau Ffestiniog, Wrexham, Newtown, Bala, Rhyl, Welshpool, and Pwllheli. The courses at most of these centres extended over two years. During the first year instruction was given in elementary chemistry and botany, followed by agriculture; and in the second year lectures were given on chemistry and zoology as applied to agriculture, followed by more lectures on agriculture. The lectures were given on Saturday mornings, and whenever possible farm excursions were arranged for the Saturday afternoons.

Saturday classes for schoolmasters in mensuration, surveying, and entomology, have also been held at Bangor and Newtown, and on one occasion a summer vacation course for teachers, extending over three weeks, was held at the College, the subjects being chemistry and agricultural chemistry.

These courses, which were attended by over 400 teachers, had to be given up for two reasons:—

(1) Owing to lack of funds.

(2) The teachers received no encouragement from the Board of Education, and when they found that attendance at Saturday classes did not enable them to increase their stipends, many of them naturally refused to give up their weekly holiday.

I have always regretted that we were obliged to discontinue them, as I believe that had they been continued with some modifications they would have enabled the teachers in rural schools to give the instruction in "Nature Knowledge" which is now in such demand, and would have placed them in a better position to assist in solving the problem of rural education.

COLLEGE FARM.

Ten years ago the Department took a farm and raised £4,000 by public subscription in order to stock it.

The farm is situated at Madryn, about midway between Aber and Llanfairfechan stations, on the Chester and Holyhead Railway. It is about six miles from Bangor, a distance covered by train in about ten minutes. In area it covers 660 acres, of which about one-half is arable and pasture land of fair quality, well suited for the growth of a diversity of crops. The remainder is an upland sheep-walk. The farm buildings, which are extensive and well-equipped, provide accommodation for a large head of cattle. Owing to its varied character, the farm offers great facilities to students for acquiring a knowledge of different kinds of farming.

Experiments have been carried out on a variety of subjects, and as Welsh farming depends chiefly on live stock, many experiments have been conducted on the breeding and feeding of farm animals.

What is perhaps the most important work done at the Farm cannot strictly be described as an experiment. I refer to the efforts put forth by the College to foster and develop the native breeds of stock. In this work the farm has been of great assistance. The Board of Agriculture have not in the past given much recognition to work of this character, but as British farming depends now, more than ever, on its live stock, I hope that the Government will take the question in hand and give financial aid. Assistance such as is being given to stock-breeding in Ireland is equally necessary in many parts of Wales and would, I am sure, be not less appreciated. It is often urged that such work may well be left in this country to private enterprise. I am afraid that in most instances this is only another way of saying that nothing will be done.

Unless vigorous methods are adopted there is great danger that the Welsh cattle will be driven out of their best markets in England by the cattle from Ireland, which are already showing great signs of improvement, owing to the assistance which has been given to stock rearing by the Irish Department of Agriculture and Technical Instruction.

The rent of the farm is £500 a year, which is brought up by rates and other charges to nearly £600.

The stock kept usually varies from 80 to 100 cattle, from 1,100 to 1,200 sheep in winter, to 1,700 or 1,800 in summer, and from 15 to 20 horses.

We have from the outset received the grant of £200 a year given by the Board of Agriculture to all such farms, but beyond that we have had no financial assistance whatever, save a donation of £20 a year for the last three years from the Carnarvonshire County Council.

When the farm was first taken we had not raised any of our capital, so that for the first year we were farming almost entirely on money borrowed from the Bank, and for some years the interest on overdraft was heavy.

The interest taken in the farm by the agricultural population has been steadily increasing, and some hundreds of farmers from different parts of North Wales now visit it annually.

FORESTRY.

Some ten years ago we arranged a deputation to the Board of Agriculture inviting the Board to make us a

grant to enable us to start a Forestry Department. Nothing came of our visit, and it was not until 1904 that we received a grant of £250 a year for Forestry. We at once appointed a lecturer, and the Department is now in working order.

The in-college course in forestry extends to about 100 lectures, and the indoor work is supplemented by outdoor excursions.

Comparatively little has been done in regard to extension lectures. Two short series of evening lectures have been given—one in Montgomeryshire and the other in Bangor.

At Chirk, in Denbighshire, an area of 50 acres is being devoted to experiments in forestry conducted by Mr. F. Storey, our lecturer in forestry. This promises to be of much educational value to students at Bangor. Already fully one-third of the ground has been planted, the remainder of the necessary plants are being propagated in a home nursery, and the work will be practically completed next year. Mr. Mahler gave the land to the County Council, but the scheme has been worked in connection with our college.

6660. (*By the Chairman.*) Are those 50 acres woodland?—It is hill land.

6661. You pay no rent for it?—No; the land was handed over to the County Council as a free gift. The County Council have to provide the necessary expense in connection with the working of it, but it is not very much.

6661a One of the duties of the Lecturer in Forestry is to visit the estates of landowners who require and are prepared to pay for his advice. Some of the principal estates in North Wales have been regularly visited, and it is interesting to note that on these estates considerable changes have taken place in the treatment of the woods—modern methods having been adopted in every case.

Single visits of inspection have also been made to other wooded properties, and reports, with recommendations for future management, have been issued. The woods on at least one estate have been placed under a systematic working plan through the drawing up of an organised scheme of management which is being acted upon.

The advisory work may be expected to develop considerably as the department becomes better known.

FUTURE DEVELOPMENTS.

6661b No development is possible unless we get a substantial increase in our grants. Up to the present the department has been starved through want of funds. There are many branches of agriculture with which we have been unable to deal satisfactorily, as our funds will not permit us to engage the necessary staff for carrying out the work. For the ordinary work of the department we have been obliged for the most part to take men who have had no experience. After getting the necessary experience at the expense of North Wales they have found no difficulty in securing more highly paid posts elsewhere. For the same reason we have never been able to retain our best students, even when we wished to do so. At the present time there are at most of the agricultural centres in Great Britain men who have been at Bangor either as members of the staff or as students.

6661c North Wales is thinly populated, and as its main industry is agriculture agricultural education is much more necessary than in thickly populated manufacturing areas, and yet the latter have usually funds more than enough to do all they require in this direction, while the poorer districts have to struggle for existence. Some discrimination would appear to be necessary in allocating grants so that the poorer and more purely agricultural districts may not be placed at a disadvantage as compared with the rich manufacturing centres.

6661d This lack of funds from Government sources has made our very existence as a centre for outside work dependent on grants from a number of County Councils. These grants have to be annually renewed so that it is a somewhat difficult matter to secure that continuity which is necessary for successful work. It is impossible to feel secure even when you know that your work has been well done. I do not for one moment wish to cast any reflection on Welsh County Councils, which have given us loyal support, but it is obviously impossible for public institutions or individuals to give their best work unless

they have reasonable security that funds will be forthcoming to carry out whatever is undertaken.

Agricultural work in Wales has always been paid for at a very low rate. As a case in point I may mention our travelling dairy schools, which on the average cost us little more than £10 for a class extending over ten days. I have been privileged to assist in such work undertaken by an English college where the payment was at the rate of £25 for every class.

6662. (*By Mr. Medd.*) What was the length of that class in England?—Ten days.

6663. The same length?—The same length exactly.

Although we have given for many years a large number of lectures and carried out a great number of field experiments, after paying all expenses the sum left in the hands of the college for the payment of the salaries of those engaged in the work has never exceeded £300 per annum. I suggest that the Government grant of £800 a year to a centre such as ours should be increased to £2,000, and that the farm and forestry grants should be increased in the same proportion. It would then not only be possible to do more work but it would also enable us to do work of better quality. We should also be in a position to retain the members of our staff for longer periods, to appoint experts who would devote the whole of their time to such subjects as horticulture and poultry management, and opportunities would be afforded to members of the staff to devote time to research work, which at present they can only do under the greatest possible difficulties.

There can be no doubt that there is great need for agricultural research, and, as the teachers at educational centres are brought into direct touch with the agriculture of their districts and have every opportunity of becoming familiar with its varied needs, they would, if they knew their business, be more likely than anyone to initiate useful research, provided the necessary funds are available and they have the time to do the work.

I am not questioning the value of a central research institute, but it must, I think, be remembered that the council of such an institute, drawn as it would be from all parts of the country, would not be likely to prove an effective body, and unless the Board of Agriculture exercised its authority—and this is to be deprecated on many grounds—the director of such an institute would be the controlling force, and however competent he might be in some directions, he could never have such a wide acquaintance with the varied aspects of the agriculture of different districts as is acquired by the staffs of the colleges in their particular areas. In consequence of this the work done at the institute would tend to turn in certain grooves, and would, therefore, be of much less value than it ought to be to the country as a whole.

We should like to develop our forestry department by providing a small forest area, say of 30 acres, for investigation and instruction; a forest nursery, of say half an acre, where students might be taught how to propagate plants; an arboretum, in which the students of forest botany would be able to study individual characteristics of trees; and a forestry museum, in which would be collected and arranged forestry implements, models, timber sections, fungi, specimens showing damage done by various pests, instruments used in forest mensuration, seeds, plants, and forest products generally.

There is just one other matter to which I should like to refer. One of our students, who is shortly returning to India to occupy an important position, has recently been spending some time on the Continent in order to see something of continental agriculture, and of the educational methods employed. One of the things which struck him most was the fact that wherever he went he met men sent by nearly all European Governments and those of North America, but that he never by any chance met Englishmen. It is impossible at present for most agricultural teachers in this country to travel unless they have got private means. If the Government were to set aside a fund, say, for travelling fellowships, which could be held both by teachers and students, they would be conferring a boon on agricultural education, the effect of which cannot readily be estimated.

6664. (*By the Chairman.*) Did I understand you to say that for many reasons the control of the Board of Agriculture of what we might call central research is to be deprecated?—How do you mean by control?

6665. Would you read that sentence again as to the

Prof. T.
Winter.

6 June, 1907.

Prof. T.
Winter.
6 June, 1907.

central institute of research?—"Unless the Board of Agriculture exercise authority; and this, I think, is to be deprecated on many grounds."

6666. Would you say on what ground?—If research work had to be carried out under the direction of the Board of Agriculture I do not think you would get as good work done as you would do if it came about in a natural way, just exactly for the same reason that I should object to direction from the Board of Agriculture in my work at Bangor. I should then tend to become a mere machine, working at the instigation of the Board, who might not always understand the exact position.

6667. It can hardly be expected that the authority of the Board of Agriculture would be exercised in such a way as to convert experts and scientific people under their control into machines?—No, I do not think it would; my experience of the Board is quite in an opposite direction.

6668. That would defeat the object of the central authority?—I quite agree.

6669. Do not you think the correlation of the results obtained by research at the various colleges and a comparison, by means of what I may call a clearing house, of the results obtained by experiment, that the action of the Board of Agriculture in that respect might be of very great value?—Very great indeed.

6670. With regard to research, are you of opinion that the teachers at the college should have more leisure for research?—Certainly.

6671. We have been told that the research should be carried out by the teachers, but that in addition, in order that research might attain its full usefulness, there ought to be a staff of persons whose sole duty was research, for what you might call the highest experiments with regard to agriculture. I suppose you would have no objection to that?—None whatever.

6672. Do you think that a travelling fellowship, or perhaps more than one, one in forestry, one in agriculture, and perhaps one in dairying, ought to be established in order to allow experts to visit the various institutions abroad?—Yes, the more the better.

6673. Do you consider that that would be of the highest practical and scientific value?—I do most certainly. At the present time few agricultural teachers in this country can travel unless they happen to have private means.

6674. I understand the University at Bangor gives the B.Sc. degree in agriculture?—Yes.

6675. Are you of opinion that the secondary education which should be given to those who will attend the courses for the Bachelor of Science degree should be of a general nature, or do you think that in special agricultural schools these students who attend the college afterwards should be prepared?—I think with regard to those who are coming for a degree, the more general information they have the better. I should like to see the education of those who are coming on for a degree to be entirely of a general character.

6676. Then you admit the need in North Wales of the institutions which are known as "winter schools," of which there are none at the present time in this country?—Yes.

6677. You give lectures and experiments, but there are no schools for those who can only frequent school until the age of 16, 17, or 18?—No.

6678. That is a large class?—Yes.

6679. Do not you consider that such institutions ought to be started for that class?—I think they would do a lot of good. We have at some centres given about 20 lectures, each of which was followed or preceded by a class at which oral instruction was given and questions asked. We have occasionally done that, and some of these classes have been fairly successful.

6680. Yes; but there is room for independent work?—Yes.

6681. Your hands are quite full as it is, and there is room for independent work in the various counties?—Quite so.

6682. You regret that those classes for elementary teachers are not continued—you have had to abandon them?—Yes; we had to abandon them some years ago.

6683. On account of want of means?—Yes; the subscriptions to the agricultural fund fell off. While we were getting £700 or £800 a year we could

afford to do work which we could not do when the subscriptions lapsed, as most of them did, at the end of the period of five years. Most of the subscribers thought that County Councils having come into existence with control of funds for such work, they were not called upon to subscribe, and so our schoolmasters' classes had to be dropped.

6684. The schoolmasters feel the want of them?—Yes, I am sure they do. The want will be more felt now than ever. Many of them did not care to attend at that time because it was not a grant-earning subject.

6685. It had no tangible result in the way of increasing salaries?—No.

6686. The dairy school at Llewenni is under the control of the College?—Yes, indirectly through the county committees.

6687. Are there any other dairy schools in connection with the College?—Not now—we had three.

6688. Why did the two others cease to exist?—They were all started by limited liability companies. In the case of Llewenni, that was taken over by the County Councils of Denbigh and Flintshire, but in the case of the other two the County Council did not take them over, and people tired of paying money. They could not be carried on at a profit, and after a time they had to be given up.

6689. The other counties have no dairy schools?—No.

6690. (By Lord Barnard.) I am a little in the dark as to the system of finance and administration of the College. I do not know whether you are in a position to give the information as to it?—Yes, I think I am.

6691. Because, you have not given us any information whatever on the subject in the long statement you have read?—No.

6692. You have concluded with an urgent appeal for the necessity of further public money, and I wonder whether you agree with me in thinking that grants of public money generally involve, at any rate, public knowledge of the system under which that money is going to be administered?—Quite so.

6693. You have not told us exactly by what body the Agricultural Department of your College is administered. Is it by a Committee?—Really, it is administered by the Agricultural Committee of the Council. The controlling body of the College is the Council, but there are several committees. The Agricultural Committee is composed of members elected by the County Council and members elected by the College; it is a big committee, and includes representatives of the agricultural community in North Wales. Half of them are elected by the College, and half by the County Council.

6694. Are the teaching staff *ex-officio* members?—Only the Principal, but, as a matter of fact, several members of the teaching staff are members.

6695. Do they meet regularly and keep minutes and have a secretary?—The College registrar is secretary of that committee. For several years now the work in the counties has almost entirely been administered by county sub-committees of this committee, and the sub-committees meet in the different counties. For instance, in Flintshire and Denbighshire, meetings are held at Rhyl; in Carnarvon, they are held alternately at Bangor and Carnarvon, and in these county sub-committees most of the county work is really done, but all the members of the county sub-committees are members of the general agricultural committee.

6696. Taking the term County Sub-Committee in the sense that there is a larger body which has delegated to them certain duties, to whom are these Sub-Committees responsible—to the County Council or to the Agricultural Committee of the College?—Half of them are elected by the County Councils and half by the College; they are joint Committees in every case but for the conduct of the work they are responsible to the College. Of course, if that work were not properly carried out, the County Councils would stop their grants.

6697. When a vacancy occurs on the staff what body sets to work to fill it up?—If it is a permanent appointment, the Council. In the case of assistants, most of whom have to be re-elected annually, the appointments are made by the Senate of the College.

6698. Who controls the finance of the Agricultural Department?—That is in the hands of the Council as the ultimate authority.

6699. The Council of the College?—Yes. They are ultimately responsible, but the finance is really controlled by the Agricultural Committee.

6700. Who really fixes the stipends of the staff?—Those were fixed originally, and there has not been much alteration since. The Council, of course, fixes the salaries of the permanent members and the Senate recommends to the Council in the case of the assistants.

6701. Supposing apparatus is wanted, or plant of some kind or another, who asks for it and whom do they ask for it?—In most cases of that kind I have got executive power.

6702. That is what I want to find out, but you probably make a report to somebody do not you?—Yes.

6703. We have had a great deal of information from all the other institutions on this question of finance, and they, most of them, have put in prospectuses and that kind of thing, but you have given us nothing?—I have got the balance-sheets and everything else here.

6704. Are your accounts audited?—Yes.

6705. Are they reported to the County Councils?—No.

6706. The County Councils are generous and give you money, and leave it to you to spend it as you like?—No; each county account is kept separate.

6707. It seems to be most elaborate?—And they have a full account of that, of course.

6708. I rather infer from something that you said that although you are very anxious to have additional pecuniary assistance from the central authority, that you are totally opposed to any further central control?—I did not wish to imply that.

6709. Assuming for the moment that this Committee were to report that the subject of higher agricultural education is a national subject and should be dealt with from the national point of view, and therefore treated as a whole, should you see anything objectionable in that?—Oh, no; but, of course, in all teaching I think you ought to give as much freedom as you possibly can.

6710. I do not for a moment suggest that there should be interference, but that the whole thing should be co-ordinated throughout the country, and that the districts should not be locked up in water-tight compartments as it were?—Quite so; I quite agree.

6711. You would agree with me that otherwise there would be a great deal of overlapping?—Quite.

6712. You would not object to rather more, I will call it, supervision on the part of the Board of Agriculture—I will not say interference?—Oh, no.

6713. Another subject with regard to finance. You have dealt with the very great difficulty you have, and you have also drawn attention to the fact that the whole question of this form of instruction has only recently been brought into public notoriety. Do not you think it is possible that in the case of agricultural instruction, the same thing may happen as has happened all over England and Wales, that private munificence will, to a certain extent, assist?—I think so, to a certain extent, perhaps.

6714. There is a spot quite close to you where a sum of £26,000 has been provided privately—are you aware of that?—Yes, I am quite aware of that.

6715. Then again in Newcastle, Mr. Dagleish has also died and left a very large sum of money, not entirely for the benefit of the Agricultural Department, but in which the Agricultural Department participates?—Yes, I have heard about that.

6716. You would agree that it is possible the same thing might happen in your case?—It is possible, but we are wanting a large fund of £150,000 to erect new college buildings, and until we get that we are not likely to get bequests for other purposes.

6717. England has taken many years to build up, you know, and things cannot be done all in a day?—The Agricultural Department, I do not think, has ever had any legacies. The College has had legacies, and of course, it may happen that in time that the Agricultural Department will have legacies too.

6718. The whole matter is at present in the course of development; you cannot regard the present state as final?—No.

6719. Or that anything that we might decide now would necessarily hold good in a few years' time?—No.

6720. A good deal has been done in the way of progress, perhaps more by your college than any other?—Yes.

6721. With regard to the question of store cattle, to which you alluded, when I was a lad I remember that an enormous number of young store cattle from Wales used to be sent up to Market Harborough, and they were considered very useful, and also in Northamptonshire. The farmers there, perhaps, do not call themselves farmers, but graziers. Is not that trade still being carried on?—I do not think the trade is so large as it used to be, the competition has got very much keener—particularly from Ireland.

6722. You think it would be well to keep up that trade?—Certainly.

6723. I do not think you have told us what fees the students pay?—Like all Welsh colleges, the fees are low. For the short course the fees at Bangor are £5 15s. 6d. In the case of an ordinary student the fees for a year vary from perhaps about 15 guineas to, say, perhaps 22 guineas, or something like that. Those taking the longer courses pay from about 15 guineas to 21 or 22 guineas a year—that is according to the number of laboratories they take.

6724. What would a year's board and lodging cost him at Bangor?—Many of the students live three or four together, and they can live much cheaper in that way. Rooms do not cost much in Bangor, but altogether, I should say, including fees, from about £30 to £45 a year. The student could live well for £45 a year; the cost of living is low.

6725. You told us that some of your students come at an advanced age—some of them over 20?—The short-course students.

6726. That does not apply to the long-course students?—Not so much.

6727. At what age do they come generally?—17 or 18 up to 20. I like the older students.

6728. We have had evidence from two or three witnesses which differs on that point. Some prefer that a lad should come from a good secondary school, having received a good education there, and other gentlemen are of opinion that it is desirable that on leaving the school the lad should have practical work on a farm first. I rather gather that is your view?—I was thinking about that. As a lad gets older he becomes a much more serious person and makes a better student. I have had good students who have come direct from school, but the general rule is that when a student comes who is over 20, in spite of what he has forgotten he does well, and is an earnest, hard-working student.

6729. With regard to forestry, you told us that part of the duties of the Lecturer in Forestry is to visit local woods and that sort of thing. I wonder if your experience will be the same as ours in Newcastle that that has rather fallen off. The people in the locality took to it rather at first, but the instructor in forestry has been in much less demand latterly?—I do not think I can say that is the same with us. I think it will be increased.

6730. I understood you to say that nothing had been done?—That was ten years ago I was speaking of.

6731. I think a good deal has been done by the Departmental Committee that inquired into the subject?—Yes, but we got no grant. We suggested at that time that the Government might do something with the Crown Lands in Wales, and that we should get a man who might really work the two.

6732. I do not know whether you would like to suggest any particular reasons that this Committee should give, if they recommended that a further grant was necessary from the Government—any reasons which would differentiate agriculture from other industries—because the House of Commons, who are guardians of the public purse, cannot distribute the public money simply because they are asked for it. Is there any special ground that you can put forward?—I have not thought of it in that connection.

6733. That is the position in which it strikes me, that if we are to recommend increased grants we shall have to give some special reasons for it. Of course we must bear in mind that any money which is granted comes from the taxpayers of the country. It is not as if the Government had a treasure box?—Yes; but it is a national question, and it is quite clear to everybody that the Government is at present really only playing with the question, the amount given is too trivial.

*Prof. T.
Winter*

6 June, 1907.

Prof. T.
Winter.
6 June, 1907.

6734. As you and Mr. Pennant have told us, if money were granted it would enable colleges like yours not only to grant increased facilities in the way of education for students, but it would provide assistance also to the country generally?—Yes.

6735. (By Lord Moreton.) Can you tell us what opportunities your pupils have of going about and seeing the practical work of forestry?—The only opportunities they have now is in going out on excursions to the woods in the neighbourhood. We happen to be well situated at Bangor in that respect. There are two or three large estates there, and the students have permission to visit them. We do not consider that it is very satisfactory however, and that is why we should like to develop it.

6736. I understand you have an experimental plot of ground, but what I wanted to get at was what chance would they have of seeing old wood—wood which had been or was going to be cut down?—Yes, there is a good deal of that seen, for instance, on the estate which adjoins the college.

6737. You do not get much hard wood there?—No, we are not in a hard wood country; you would have to go further away into Montgomeryshire, and parts of Denbighshire, but of course it could be done by means of excursions.

6738. As regards the labourers who work on your farm, have you ever done anything to encourage or teach the young men and give them a lift up?—We do not employ any young men at all; I have no boys.

6739. You have never thought that it might benefit a certain number of the labouring classes to qualify them as labourers or shepherds at your farm?—Yes, and I should be glad to do it, but we have to pay rent and taxes—nearly £600 a year, and we get no county grants at all for the farm. We have only got the Government grant of £200, and our labour bill amounts to about £800 a year.

6740. Lord Barnard asked you a question about Welsh cattle. I imagine the object of your farm is to teach your pupils what are the best cattle to keep in North Wales. I presume you consider the black Welsh cattle are the best?—For a great part of it; for the greater part of North Wales. I think the Welsh cattle are the best and they are the cattle of the country.

6741. Quite so, but do you have any other cattle?—Very rarely. I have others occasionally, but I do not consider it is any use to have a specimen of this breed and a specimen of that. I do not think that is of any value to the students. They had better go to a Royal Show or something of the kind, and they can there see an exhibition of the various kinds of cattle.

6742. Of late years black Welsh cattle have gone down in the estimation of the British farmer a good deal, have not they?—I should not say so; if you look at the records of the Smithfield Show.

6743. I am not talking of special animals, I am talking of the breed *qua* breed?—There is room for improvement.

6744. As regards your sheep I suppose you specialise from the local breeds there also?—Yes, Welsh sheep chiefly.

6745. In fact, in all the stock, I suppose?—Yes, we keep at the farm Welsh cattle, Welsh sheep, and Shire horses; we have not done anything with ponies.

6746. Pigs?—At the present time we have not got any pigs.

6747. Have you sent any pupils up at any time for the National Diploma?—No, we have not for years had a pupil who has gone up. I have never encouraged them to do that; what I do encourage them to do, if they can stay long enough at the college, is to go for a degree.

6748. You consider a degree is the best?—Yes.

6749. I do not know whether you are aware that Aberystwyth has from time to time sent their pupils up for the National Diploma?—Yes, they have taken the other line; their pupils have gone up more for the National Diploma, and not so much for the degree.

6750. They can take a University degree if they choose?—Yes.

6751. Your pupils can go up for the National Diploma if they wish to do so?—Yes, but we have a certain number every year who go in for the degree.

6752. (By the Chairman.) I just want to make that matter of the committees quite clear. The Agricultural Committee is I understand a committee of the Council?—A committee appointed by the Council.

6753. It is a sub-committee?—No, it is not a sub-committee of the Council; it is a committee appointed by the Council.

6754. Half of the members of that committee are appointed by the Council, and half of them are appointed by the County Council?—Yes.

6755. Then the county committees again are appointed by the Agricultural Committee?—Yes.

6756. Half of them are appointed by the Agricultural Committee but they are not necessarily members of that Agricultural Committee?—Not necessarily.

6757. The other half are the County Council members of the Agricultural Committee?—Yes.

6758. They report to the Agricultural Committee?—Yes.

6759. (By Mr. Medd.) In answer to Lord Barnard, you referred to the paltry grants for agricultural education. You are aware that £100,000 a year is spent now on agricultural education?—In what way?

6760. In various ways of course, but I mean by the central and the various local authorities?—Yes, it would be in that way, but not the Government grants.

6761. By the central and local authorities?—I do not know the exact sum.

6762. Very nearly £100,000, which is quite a considerable sum?—Yes.

6763. You will agree with me that if we are to get them increased we must prove that there is no waste, that the money is expended to the best possible advantage, and that we do not allow any gaps to remain?—Quite so.

6764. In answer to Lord Reay you said you entirely approve of the idea of an intermediate school independent of your institution at Bangor?—Yes.

6765. That school I take it would be part of the scheme under your direction. I think the school was suggested at St. Asaph?—It was Mr. Pennant who suggested that.

6766. Of course Mr. Pennant's evidence is over, but it was St. Asaph, I believe. Can you give me any idea of the type of school you would establish?—I think you misunderstood me; I did not say I would establish them.

6767. In answer to Lord Reay you said you quite approved of an intermediate school of that grade of agricultural education?—No; I do not think I did say that.

6768. I think so, and you used the word "independent." I only wanted to get you to agree with me that it would form part of your own organisation, only it would be situated in a different locality?—I was asked by Lord Reay with regard to the character of education that I thought suitable for the students coming on to us to take degrees, and I said in reply to that that the more general education they had the better.

6769. Then Lord Reay mentioned about the grade of agricultural education for those who could not come to you and who must finish all their education at 15 or 16, and you agreed with him that a permanent institution to provide such instruction for them was desirable independent of you?—Exactly.

6770. By using the word "independent" you do not imply that it should have no connection with you, but that it would simply be in a different locality and form part of your general organisation?—Yes.

6771. That brings me back to the original point of how we are to prove the need for more money, that you, as a collegiate centre, should make yourself responsible for every grade and type of agricultural education within that area?—Yes, that would be my view.

6772. Can you, Mr. Pennant, kindly give the Committee at some future time a copy of the scheme for this school at St. Asaph?

(Mr. Pennant.) Yes, I think I can do so, but it was entirely the County Councils of Flintshire and Denbighshire that were taking up this question. The intention would have been to have made this a school under the General Welsh Intermediate Act, but devoted to agriculture more particularly for the Counties of Flintshire and Denbighshire. Any extra expense in connection with it would have come from those two County Councils.

Prof. T.
Winter.
6 June, 1907.

6773. Of course, the scheme is entirely provisional at present.

(Mr. Pennant.) You mean the suggested scheme?

6774. Yes.

(Mr. Pennant.) Yes.

6775. It would be of great assistance to this committee I am sure if we had an idea of the type and grade of school you propose to establish?

(Mr. Pennant.) I think I can find you that information.

6776. Thank you very much. (Mr. Pennant subsequently forwarded copies of the draft and amended scheme of re-organisation of St. Asaph Intermediate School.)

6776A. (To the Witness): In regard to the scholarships, have you scholarships for each of these courses: the degree course, the diploma course and the short course?—Most of the short-course students come to us with exhibitions given by the County Councils.

6777. Have you scholarships for the degree course?—We have a few confined scholarships, that is confined to agricultural students of the college; but most of the College scholarships are open to agricultural students; the college gives a number of scholarships varying in amount from about £40 to £10 a year; those are open.

6778. Is no examination held for these scholarships?—There is no examination held for the short-course exhibitions, but for all the other scholarships there is; and unless we get suitable candidates, the scholarship is not awarded.

6779. The exhibitions in the short course cover the cost of tuition and maintenance, I suppose?—They are very small, varying in amount from about £12 or £14—£14 is the highest for the short course.

6780. What would a student have to pay out of his own pocket?—He pays £5 15s. 6d., in fees; and he has got to pay for board and residence for 11 weeks. The short-course students all live in the neighbourhood of the farm. On three days of the week they go to the farm, and on the three remaining days they go to the College at Bangor.

6781. Are they as a rule young farmers?—Yes.

6782. What education have they had generally speaking before they come to you?—From the elementary schools mostly, but we are now getting some from the intermediate schools.

6783. You spoke, in answer to Lord Reay, of the defective preparation of some of your students. From what class do those students come?—I said that many of our students were men from 20 years of age to 30, and sometimes I have had them as old as 36; and they probably have had very little education.

6784. Are those who come to you from schools sufficiently prepared?—Very much better prepared than those I have just mentioned.

6785. They would be, I suppose, from the intermediate schools?—They nearly all come from the intermediate schools.

6786. Do you find any difficulty in regard to the arithmetic or composition of the students who come to you from the elementary schools after a lapse of two or three years?—Yes.

6787. Of course that handicaps your work?—Yes; and many of them, of course, habitually speak Welsh when they are at home. Some of them perhaps do not know very much English; in a number of cases their English is defective.

6788. You must lose a considerable time in overcoming those difficulties?—You have to give a good deal of time to them, but as a class they are most excellent students.

6789. I notice you have a year's course for students who have already completed a two years' course in the day training department who propose to become teachers in rural schools. What are the conditions in that course?—It is intended for those students who have already had the two years' training in the day training department, those who have come back for a third year. We started that course some years ago, but as a matter of fact very few students have taken it. Those students have had their ordinary training, and have generally taken chemistry and botany to a certain stage, and our course really picks up the work where they have left off before. They receive considerable training in chemistry as applied to agriculture, and continue their course in botany and applied botany, and take subjects like book-keeping and entomology. I have the exact scheme here if you would care to see it.

6790. Perhaps you would put in the curriculum?—Yes, and they take the courses in agriculture. Perhaps I may explain here that I do not want to have agriculture taught in the elementary schools, but these teachers, if they have a fair knowledge of it, would be much better able to teach the applications of chemistry and botany to agriculture.

6791. Yes, and they can use natural and physical phenomena as a sort of basis for ordinary class lessons?—Yes, quite so. I met a student a few days ago who had been through this course, and is now the head master of an elementary school of nearly 200 children. He said it had been of very great value to him. I happened to meet him the day before I came up here, and I asked him the question.

6792. Is this third year to follow immediately after a two years' course, or does it come after an interval?—Immediately after.

6793. How many have you had?—I think only four, altogether—usually we have not got anybody.

6794. You alluded to the difficulty in regard to the acting teacher and his not receiving any additional salary?—Yes.

6795. What would you suggest as an adequate increase of salary if he gives up his time? What should you think in addition to his ordinary salary the teacher would be worth?—I think in time things will be done quite differently. In Merionethshire, for instance, they have actually made a start; they want to re-model their schools, and have had a conference with the Education Department on the subject.

6796. Have you formed any idea as to what would be a fair sum to offer a teacher who took the trouble to become qualified in addition to his ordinary salary?—No, I have not looked at it in that way, but what I should like to see is that the rate of salary of the town and country teachers should be the same; as it is they all want to get to the towns.

6797. If they would consent to be State paid, that could be overcome. Has it been suggested to you that you might have a third years' special course for certificated trained teachers to be taken after the lapse of say four years from the period of original training?—No, not to me.

6798. Of course, the whole organisation of your education in Wales comes under the Welsh Department?—Yes.

6799. The Board of Education in England have agreed to a proposal of that kind. Possibly you might suggest that to your department—a special third years' course for certificated rural teachers at an agricultural institution such as yours?—Yes; I think that could be managed.

6800. You spoke of the amount of literature which you circulate. What steps do you take to distribute it; how is it distributed?—The reports?

6801. Yes, the bulletins you referred to?—Just in the way of leaflets.

6802. Have you any effective method of distributing them?—Yes, it is pretty effective I think. We have a large free list; we write to the secretary of every Parish Council in North Wales and send him copies of the leaflets and ask him how many copies he would like for distribution in his area, and the County Councils the same. In addition, all members of our Committee and all past students, all secretaries of extension lectures and those who are carrying on an agricultural experiment, receive copies of them.

6803. They are very widely distributed?—Very widely. I do not suppose you can go to any hamlet in North Wales where you will not find our reports.

6804. Do you come in contact with the official Correspondents of the Board of Agriculture at all?—Yes, the local ones; I probably know them all.

6805. Are they of any assistance to you in the work of your agricultural department?—I cannot say that they have been, but I think probably most of them are members of our Committee.

6806. Perhaps you would agree with me in thinking that if a strong influential consultative committee in London, composed of representatives from the different counties in England and Wales, and were appointed and met periodically to confer upon questions of agriculture and agricultural education, and to bring pressure upon the Board of Agriculture and

Prof. T.
Winter.
6 June, 1907.

the Treasury, it would be a more effective system than that of the isolated correspondents?—Yes, I think it might.

6807. You said that you were not able to arrange at present for your teachers or members of your staff to undertake foreign tours?—We are not.

6808. You are aware that in Essex especially the County Council has arranged these foreign tours for farmers?—Yes.

6809. Could not something of the same kind be arranged in North Wales?—The County Councils are very hard pressed for money; they have had to support their intermediate schools. That difficulty has of course not been felt in England yet to the same extent as we feel it in Wales.

6810. You must remember you get more money in Wales from the Exchequer than we do in England. You are much better off really. The Exchequer gives you one penny to every penny you raise locally; it does not give us that. Still, I only make the suggestion that something might be done in that way. You mentioned the agricultural co-operative societies?—Yes.

6811. They have been developing in Wales?—Yes.

6812. Do you find as agricultural co-operation develops it creates a demand for agricultural education?—They are only at present in their infancy. There has not been time to judge yet. If I had not come up here, I was going to address a meeting of the Anglesey Co-operative Society this afternoon.

6813. Your educational efforts have tended to some extent to increase the demand for co-operation?—Undoubtedly, but it has been slow. Nearly ten years ago when the British Dairy Farmers' Association came to North Wales I was local secretary, and I arranged then that one of the subjects for discussion should be on co-operation. It created a little interest then. I got Professor Long to come down and give an address on the subject at Bangor sometime afterwards. That created some interest at the time, but progress was slow. Latterly, however, it has been more rapidly, and we are now giving quite a number of lectures all over North Wales on the subject.

6814. Are they mainly with reference to co-operative production or co-operative distribution—rather in the purchase of manures and so on than with regard to sales of produce?—Yes, chiefly as to purchase, but there is no reason why co-operative distribution should not develop; of course, purchase is much easier.

6815. You probably think the Board of Agriculture and the Treasury would be justified in supplying funds to encourage the formation of co-operative societies?—To what extent?

6816. That is indeterminate at present?—In what direction then?

6817. By propaganda?—I think it would be very desirable.

6818. The point has been acutely debated in Ireland and referred to in England, and in the Small Holdings Bill there is a suggestion of the same kind?—Yes.

6819. You think the Government would be justified in supplying funds for the promotion of co-operative agricultural societies?—Undoubtedly; but I think it is a thing which would require to be carefully dealt with, of course.

6820. I do not mean for the promotion of their trade.—Oh, no.

6821. (*By Professor Middleton.*) How many students have you usually attending your short courses?—They vary from about 15 to, I think, as many as 25.

6822. What is about the ordinary age at which they come to you?—We do not take students unless they are over 16, but I do not like to have a student at that age.

6823. I wanted to ask you what age you would like your short-course students to be—what is the best age for your short-course students?—I do not like them to be so long away from school that they have forgotten what they learnt there. I like them from, say, 18 to 20.

6824. You like them to have a considerable knowledge of farming before they come to you?—I do, certainly.

6825. In spite of the fact that these students have an indifferent preliminary education and have left school for some years, you find them to be the most satisfactory class of student you have to deal with?—Yes. I

was going to give the case of a man who has just been appointed lecturer in agricultural chemistry at Aberystwyth. He came to us as a student almost without preparation, and he left after taking first-class honours in his University degree. He held for a time a most important appointment in Lancashire, and is now lecturer in agricultural chemistry at Aberystwyth.

6826. Nearly all the short-course students go back to the land, do they?—Practically all.

6827. What is the reason of the satisfactory character of the short-course students; is not it his keenness to learn?—Certainly.

6828. You find that every short-course student is anxious to learn?—Almost every one. The ordinary students live in Bangor. The Principal is the person in charge, and questions of discipline has to be dealt with by him, but these students live in the neighbourhood of the farm where I reside, so that I have practically the same control over them as the Principal exercises over the students at Bangor, and in a period extending now over ten years I have scarcely ever had a fault to find with a short-course student. Some of them come back to us to take longer courses.

6829. The real reason for their satisfactory character, is that they are very anxious to gain information?—Yes.

6830. And as a matter of fact they do gain a very great deal of information?—Yes.

6831. When these students go back to their farm how do they compare as a rule with a man who has been through the longer course. Take, as a type, a Welsh farmer who has been through your longer course and a Welsh farmer who has been through your short course?—We have fewer who have been through the longer course; a lot of the men who have been through the longer course take better positions elsewhere.

6832. I suppose the short course exercises more direct influence on farming than the longer course?—Yes, perhaps it does. It is difficult to compare the two. There are more of these short-course men who go back to farming. It involves a considerable sacrifice to send a man to college; and after spending two or three years at college they think they would like to find something more lucrative than farming, and many of them do.

6833. Have many of your short-course students been to the evening continuation schools of the County Councils?—Very few.

6834. Some reference has been made to the establishment of winter schools as a means of continuing the education of boys who have left the elementary school. From your knowledge of North Wales would you think would be likely to affect agriculture to the greatest extent—the winter school or the short course. Perhaps you have not had time to think over that?—It all depends how you conduct the winter school. I should like to have an increase in the number of short-course students.

6835. In a winter school I gather you do not intend to teach practical agriculture; it is to be a general course on the subjects which bear upon agriculture?—You could not in many cases teach the subjects as well as they do at the colleges. If they go to the college they have laboratories at hand which you could not have at the winter schools in many of the districts.

6836. Would you prefer a development of the short-course system or of the winter school system. Which do you think would be most likely to be of advantage?—I do not think I should care to choose between the two. I do not see why they should not both be developed. I think it would a great deal depend upon circumstances, but I know the good that the short course does. The other of course I have not had experience of, but I have no doubt whatever they would do a great deal of good.

6837. Coming to your farm, how do you use it for the purpose of teaching. In the case of a short-course student you take him there three days a week?—Yes.

6838. How do the long-course students do?—They come there practically every week, sometimes twice; but with the amount of work they have got to do at the College they have not much time for that sort of thing.

6839. What happens, I suppose, is that you take them over the farm and explain what is being done?—Yes.

6840. The college student, I suppose, does not do any

of the practical work during term?—No, not the ordinary student; the short-course students do a little.

6841. You expressed the opinion that Government ought to give you grants in aid of stockbreeding. On what grounds would you base a claim for that aid? The only instance we have got in this country is the Royal Commission on Horse Breeding, which gives premiums for the breeding of horses.

6842. Your argument is, is it not, that the number of breeders of pure-bred Welsh cattle is not sufficient for the requirements of the country?—I do not argue in favour of any particular breed.

6843. I understood your argument to be that the Welsh cattle-breeding was suffering because of the small number of good animals that was being produced?—Oh, dear, no. I have seen a map at the Board of Agriculture which shows the number of cattle kept in certain areas and in Anglesey, I believe, there are more animals than in any other county of the same area.

6844. Yes, per acre; but I understood you to say you were in need of more animals for breeding purposes?—What I say is this, it would be a very good thing for Wales, and I am speaking of Wales more particularly, if the same assistance were given towards stock breeding as is given in Ireland. I did not say for Wales alone, of course, I am not making any plea of that sort.

6845. Taking your farm for example as a farm where pure-bred stock is produced, I do not personally quite see how one could give a grant to that institution and refuse to make a grant to some person who was, perhaps, breeding better stock in the same neighbourhood?—I merely say an institution like ours might render very useful help.

6846. It can only do so if the number of pure-bred stock is insufficient for the requirements of the country. That is the case in Ireland, at least the Irish Government holds that the number of pure-bred stock in the country is insufficient for the requirements?—Of course the effect of what they are doing in Ireland is this, that instead of using the ordinary bulls they have in Ireland they are taking into the country very large numbers every year of animals from England.

6847. They are grading up?—Yes, animals they buy in this country at prices varying from £25 to £50 or £60 a head.

6848. My point is, do you feel you require to be graded up in that way in Wales. Is the supply of first-rate well-bred cattle for stud purposes for the local requirements sufficient?—I think it is not, and that does not apply to North Wales only.

6849. (*By Lord Moreton.*) Would you restrict it to Welsh breeding?—No, I would not restrict it to any breed.

6850. (*By Professor Middleton.*) My difficulty is this, that if a grant were to be made to you in respect of the pure bred stock which you breed on your farm at Bangor the same claim could be put forward by some other breeder in your neighbourhood, I should suppose, and that would really mean subsidising the stock breeding industry?—Well, I do not see why you should not.

6851. Then you admit that if we were to give grants to you we should have to subsidise the stock breeding industry?—Yes, I believe in subsidising the whole stock breeding industry. I am not asking merely for a grant for ourselves at all; I think the benefit to the country generally would be very great. We are suffering, and we will suffer more, on account of the subsidised cattle which come from Ireland.

6852. You mentioned the fact that when you first started the farm your initial heavy expense was the interest on overdrafts. Have you now sufficient capital?—We have a little overdraft, but I try to keep that down as far as possible.

6853. That difficulty has largely disappeared?—Yes. Last year, for several months, I had not an overdraft at all from the bank. When we first started it was all overdraft. We got a little money in before the end of the first year. We had collected about £4,000 at the end of the second year, but we have always had an overdraft; fortunately it has been getting steadily less, and is not now a great burden. We have generally been paying interest at the rate of five, and sometimes six per cent.

6854. May we take it that you are now running the

farm at a cost to you of £200—the amount of the grant you get?—We get a little from the students' fees. Practically the entire management of the farm is in my hands. We have got a committee, but they do not interfere much, and I have got to see that we do make things meet, because we have no fund on which we can fall back.

6855. That is what I wanted to get at? You are able to make ends meet with this £200 a year?—Yes but you must remember our work is limited—we have made ends meet, in fact I think we have probably done a little more because our bank overdraft has largely disappeared, and I think our capital as represented by our stock is probably worth more now than it ever was.

6856. I suppose you have an annual valuation of stock?—Yes, every November.

6857. (*By Mr. Davies.*) Has the capital which went to pay for the stock been contributed from private sources?—Yes, except that the Anglesey County Council gave us £100. With that exception, it is all private subscription. The overdraft disappeared as the subscriptions were paid in; but after all the subscriptions, the £4,000 we raised, had been paid, our stock at the commencement cost us £4,700, so that we had to begin with a considerable overdraft.

6858. It has disappeared little by little out of the profits you have made from the farm each year?—Yes; it has mostly disappeared now.

6859. To go back to the stock question for a minute, I gather your idea is that there should be some sort of allocation of grants in the same way as is rather done in the case of horse breeding—that there should be awards and premiums given in different parts of the country. That is the sort of system you would like to see?—Yes, something of that kind to encourage stock breeding. I suppose really the Government has in view remounts for the army in making the grants for horse breeding, but I do not see why the same thing should not be done in respect to cattle breeding; it would improve generally the cattle of the country to an enormous extent.

6860. I see in the report which has been issued by the Board of Agriculture that your staff consists of about nine persons altogether, including yourself?—I suppose there would be about that number, but those are appointed for agriculture alone. I have got two assistant lecturers; then there is the lecturer in agricultural chemistry, and the lecturer on forestry, and outside lecturers who take special subjects, like veterinary hygiene, and things of that kind. Of course, we utilise several members of the ordinary staff of the college for botany, and chemistry, and that sort of thing.

6861. Of the students attending the courses of instruction at the College during the past Session there was one in his fourth year, four in their third year, one in his second year, and one in his first year. For the diploma course there were four students in their second year and six in their first year. For the special courses there were three students and thirteen for the short courses for farmers' sons, and three students who attended the autumn and spring terms—altogether, sixteen in the short course?—Yes.

6862. So that altogether there are only about 37 students in the college?—Who were there for agriculture alone, yes.

6863. How are the staff employed when the short course comes to an end during the summer months. I mean to say that when the short course comes to an end there would only be about 10 students left in the college?—My assistants do not do very much of the in-college work. Most of the in-college work, lecturing on agriculture is done by me, and I also arrange the work and supervise it in all the different counties. The lecturers during the winter months give lectures and in the summer there are the experiments.

6864. So that the staff is fully occupied from one year's end to the other?—Well, we always try to let the assistants have two months' holiday clear. For myself I have not had a months' clear holiday for ten years, not since I have had the control of the farm.

6865. In your opinion is not the number of the students at the college far less than it really should be. You would expect a far greater number of students in proportion to the staff, would you not?—Yes, we could deal with a considerably larger number.

6866. Double?—Yes.

Prof. T.
Winter.
—
6 June, 1907.

Prof. T.
Winter.
6 June, 1907.

6867. For what reason or reasons is the number of students so small?—I have no doubt that in the near future the number will increase. It used to be a very difficult matter to get students. I am sure in my early days in connection with the college more than three-fourths of the students I had to get by canvassing, and that with some difficulty, but now they come willingly.

6868. Do you think the methods adopted by the County Councils in giving scholarships has anything to do with it; I refer to the fact that each county council in awarding a scholarship has no examination, and very often it is a question of influence, and the large farmer who can perfectly well afford to pay for his son to go to college is able to get a scholarship for his son, and the small farmers complain that whereas the large farmers who can afford to pay get scholarships for their sons, consequently the small farmers interest in the college diminishes?—I should not say their interest in the college diminishes, but there is something I think in that.

6869. They make no sacrifice to send their sons?—Of course if you give too many scholarships people do not appreciate the instruction sufficiently. There is always that danger in giving scholarships, but now the cost of education is coming more and more on the rates everywhere.

6870. Could you not devise some scheme to contribute the money awarded in scholarships to a common fund, and then allow representatives from each county and the college to distribute those scholarships after examination as they thought best. Do you think that would be a good thing. I understand now that the County Councils are quite prepared to give scholarships for students who go up for the short course, but they are not prepared to give scholarships for the advanced work so that your best students could go on from the short course to the diploma and to the degree course afterwards?—The County Council of Carnarvonshire do give scholarships for longer courses. We have these students for two years, and they always take the diploma or degree. We have also now a £50 scholarship from the Surveyors' Institution and a £30 scholarship given by Colonel Platt, but those are for long courses. The students must stay at the college for not less than two years. I should like to see more.

6871. Do you think it would be a great advantage if there were a committee of that sort to allocate the scholarships and hold an examination of the candidates?—When you get a number of applicants you must examine them, but up to the present the number of applicants has not been very great. Last year we had twice as many applicants for short-course scholarships as we have ever had before. When we first started there never was any competition for the scholarships, now the competition has been increasing year by year, and the plan the County Committees have adopted is to strike out the younger ones, but no examination has been held yet for these short-course scholarships. We will have to have a new plan as competition increases.

6872. Do not you think, in order to get hold of the young men it would be a good thing to have some sort of evening classes, or winter schools in the different counties so that you would be able to get at the young men and give them a short course there preparatory to the examination for the scholarships?—Anything in the way of a winter school would help very greatly.

6873. Could not you have it in the intermediate school by making the intermediate school the headquarters?—Yes, but then, you know, it would be difficult to get the pupils there. As it is now, the pupils have to come by train a good many miles to the county schools, and in the evenings the facilities for coming by train are not so great, and the county school area would probably not be the best area for them.

6874. But you think those winter schools would be practicable?—Yes.

6875. Supposing you had an increased grant, would you endeavour to have a lecturer for each county, a man who was on the college staff and responsible for the work carried on by the college in each county, that is each county affiliated to the college?—I do not know that we could arrange it in that way, but it might, of course, resolve itself into that.

6876. We hear a good deal about rural depopulation in these days. I suppose that still goes on in the purely agricultural counties which are attached to the college?—Yes, I think so.

6877. Do you think it would be a good thing, supposing a lecturer were appointed in each county who was responsible for each county, that they should also enquire into the economic problems in these counties in order to try and stimulate agriculture in the particular areas for which they were responsible?—I think there is no particular reason if you had the right men why that should not be done.

6878. I suppose the agricultural problems which you are engaged in trying to solve are much the same as those the staff at Aberystwyth have been engaged upon?—Yes, but perhaps we get a greater variety in North Wales than they do. We have all that part of Denbigh round the Wrexham country down into the Severn Valley. I suppose there is no part of the United Kingdom where there is more variety than in North Wales.

6879. Do you think it would be advisable to have more co-operation between the two departments at Aberystwyth and Bangor in the way of comparing notes, and arriving at some common plan of campaign so as to avoid overlapping as far as possible?—Yes, I think something might be done, not only at Aberystwyth and Bangor but at all the colleges. There is some danger of overlapping, but I should not like to say there actually is any now. With regard to experiments the great thing is demonstration, and to keep pegging away year after year. Somebody mentioned charlock spraying this morning. I may say that we have been spraying for the last 10 or 12 years in every quarter in North Wales and it is only within the last two or three years that the work is beginning to bear fruit and that farmers are beginning to spray for themselves. On that point I have a letter which came to me only this week from a lecturer in agriculture appointed by the Glamorgan-shire County Council. He says: "Your leaflet No. 4 on spraying charlock I find influences farmers here to give spraying a trial." That is one result of the distribution of these leaflets. That is many miles away from us. I have had inquiries from all over the country, and I think it is largely due to the fact that we distribute our reports in the form of leaflets. The number of inquiries on this and other subjects is increasing every year.

6880. With regard to the forestry department, most of the work of your lecturer is outside the college, is it not?—Yes, we have one in-college course of 100 lectures, but the principal part of his work is advisory.

6881. The advice is paid for?—Yes—particularly down in your own county of Montgomeryshire.

6882. If that part of the work increases will this particular department of the work become relegated to the college?—I do not think that is likely, but as a matter of fact if we had money we would spend it in developing the department. At the present time the fees for advisory work amount to £50 or £60 a year, but I have no doubt whatever that they will increase. Some of the largest estate owners in Wales are now acting entirely on the advice of our lecturer in forestry, and I have no doubt that still more will do so. When we started the forestry department we anticipated that giving advice to landowners would eventually be one of the most valuable parts of the work.

6883. If it was extended no doubt the fees would pay for it?—I do not know that you could get people to pay very large fees. The lecturer would go for two guineas a day and expenses.

6884. Have you done anything with reference to your old pupils. Have you got an association for keeping in touch with them, or any machinery for keeping them together after they leave you?—We have not an association.

6885. Some of the other colleges have?—Yes.

6886. Do you think that would be a good thing?—I think it would, but we are pretty much in touch with them, and large numbers of them come to the farm every year. We are constantly writing and sending them things, but we have not an association that brings them all together. I think an association would be a good thing.

6887. (Lord Moreton.) There was one point I was not quite clear about. You were talking about the clearing off of the overdraft on the farm. Is there a separate farm account at the bank, or is it the agricultural department account?—No, it is a separate account; we have a separate agricultural account too.

6879a

6888. It is a wheel within a wheel?—Yes. No money from the ordinary agricultural account goes to the farm, the farm has got to pay its own way.

6889. (*By Professor Middleton.*) In reply to one of Mr. Davies' questions you referred to the fact that there might possibly be overlapping of work in colleges. Have you yourself ever come across any case of overlapping?—No, I cannot say that I have.

6890. Have you heard of anyone else who has come across it?—No, but people say there might be; one often hears it mentioned.

6891. You have never personally come across a case?—No, I cannot say that I have.

6892. (*By Mr. Davies.*) Do you carry on any analysis work in the College?—Do you mean for individuals?

6893. Yes.—No, we do not, but I think in the course of the next year our agricultural chemist will probably be appointed analyst for the different counties.

6894. He has not been so up to the present?—No, not that there will be so very much done, because farmers do not send many samples in.

6895. (*By the Chairman.*) Is there a separate committee for the farm?—There was a farm committee which met periodically, but that committee has now been dissolved.

6896. You reside on the farm?—I reside on the farm.

6897. You are responsible, but the Agricultural Committee supervises the farm?—Exactly.

6898. As it does the Agricultural Department?—Yes.

6899. Would you be in favour of the Board of Agriculture having a staff of expert gentlemen who could be sent for throughout the country in case of the outbreak of an epidemic or any matter of that description which required investigation. We have been given instances of calamities of that kind having occurred, and we were told that the college that was near could not spare their best men for investigations of that kind. Has that come under your notice in North Wales?—There are the Board of Agriculture inspectors.

6900. I am not talking of the Board of Agriculture inspectors, I am talking of experts who would be able to do research work on the spot, and who would have time at their disposal in which to do that work. The duty of the Board of Agriculture inspectors, of course, is to inspect educational institutions, and they have no time for such work as I have mentioned?—Quite so.

6901. The men who I suggest would be high class experts?—Epidemics could not, of course, be dealt with by a college; they would have to be dealt with by people appointed by the Board of Agriculture.

6902. You think there would be scope for a staff of that kind, organised on a central basis, which would be available throughout the country for any emergency and urgency work of that kind?—Of course, that would apply largely to animals, would not it?

6903. Quite so, and diseases of plants and trees, for instance?—In cases like that, if we had the necessary funds and the necessary staff we should probably be better able to deal with them than the Board, or at least quite as well.

6904. I merely mean that the staff at all the colleges—it applies almost to all of them—is overworked as it is?—They have not time—certainly with us they would not have any time for such work.

6905. Therefore in case an emergency of the kind arose there ought to be some provision made, and it could only be made of course by a central agency, and it is clearly incumbent on the Board of Agriculture and on the Treasury to provide means for such?—Yes. The colleges at present are really unable to take that up.

6906. (*By Professor Middleton.*) We have at the Board of Agriculture a highly expert veterinary staff who deal with outbreaks of disease in animals?—Yes, that I was aware of, and for several years I have been repeatedly brought in contact with them. I might say that I think that staff might work more perhaps in connection with the colleges than it does at present—I frequently hear of inspectors coming down from the Board for various purposes, but many of them never come near us, although our local knowledge would frequently enable us to give them real assistance.

Prof. T. Winter.
6 June, 1907.

Mr. THOMAS HACKING called and examined.

6907. (*By the Chairman.*) You are the Principal of the Countess of Warwick's School, Bigod's Hall, Dunmow?—Yes.

6908. Will you tell the Committee how the School came into existence?—In the year 1897 the Countess of Warwick became deeply impressed with the idea that something should be done in the way of educating those who would eventually be engaged in rural occupations. The critical state of agriculture clearly showed the need of an attempt to infuse into agriculture something of the spirit which animates the industrial centres—to blend practice with science. Her ladyship firmly believed that much could be done to attain this end by giving a sound education, thoroughly adapted to rural requirements; and with this idea she founded the school now in existence at Bigod's Hall.

6909. It was founded by her—she gave the means to support it?—I should perhaps explain that at that time she had a country mansion at her disposal, which belonged to her, and she simply transformed that into a school, and also provided the means as well.

6910. What are the objects and aims of the school?—Upon that point I have made the following notes:—Those who have paid the slightest attention to rural education will agree that it is very difficult to carry out. This is due largely to the complex nature of the material to be dealt with. It is obvious upon the most superficial reflection that every boy and girl in our country districts cannot become farmers. All, however, have to be provided for in some way or another; and, if we may briefly review the varied interests of a rural community, there are, in addition to farmers and gardeners, the sons and daughters of village tradesmen, all more or less depend-

ing upon the welfare and prosperity of agriculture, but in no sense taking any active part in the practical cultivation of the soil. We have ever kept this complexity of the rural community before us in drafting the scheme of education now in operation, and it has had a most important bearing upon the instruction given. We contend that it is not desirable to carry out a purely secondary curriculum, and a few years ago we submitted this view to the Board of Education; but the result was disappointing, and ended in the Board withdrawing its grant from the school, on the ground that we did not fulfil all the requirements of a secondary school; but before the actual severance took place an attempt was made to carry out the regulations of the Board, and the results of that attempt soon became evident. Boys and girls began to drift townwards, and as the result of an analysis made three years ago we found that less than twenty per cent. of our students went into agriculture or some form of rural employment. The rest (over eighty per cent.) found their way into City offices, shops, railway offices, etc. From this it is clear the school was not fulfilling the object of its noble founders, so we cut ourselves adrift from the Board of Education and struck out to mould a curriculum of our own, and one entirely in accordance with our view of the requirements of the district; and as a result of this modification a notable alteration has been observed—something like forty per cent. of our pupils now pass into some branch of rural industry.

6911. Now, with regard to the area served by the school?—The school serves the immediate neighbourhood for a radius of five or six miles for day pupils, many of whom cycle or drive. The boarders are drawn from a very wide area, and during my connection with the school we have had pupils from the following counties:—Northumberland, Durham, Lancashire,

Mr. T. Hacking.

6910a

6910b

Mr. T. Hacking. Derbyshire, Cheshire, Suffolk, Sussex, Surrey, Buckinghamshire, Nottinghamshire, Yorkshire, Essex, and also one pupil from Ireland. The age of the pupils varies from 12 to 17 years, and of the present number 72 per cent. are boys and 28 per cent. girls.

6912. Are any of them resident in the school?—Yes, 12 at the present time are in residence.

6913. Twelve boys?—No, eight boys and four girls.

6914. They are resident in the school?—Yes, as boarders.

6915. Are there any scholarships at the school?—Yes, we have one or two scholarships—private scholarships really. At the present moment we have two from the Hertfordshire County Council, and Sir Walter Gilbey gives a scholarship, and Lady Warwick also gives two scholarships.

6916. You have no grants from any of the counties?—We are just being recognised now by the Board of Education under the secondary and technological branch, and possibly we shall earn a grant because of that.

6917. You have no grant from the Board of Agriculture?—No.

6918. And no grant from the County Council?—Not at present, but the Essex County Council are considering making a grant to the school of £100.

6919. What fees are paid by the students?—The fees for day scholars are six guineas a year and for boarders 30 guineas a year.

6920. Now, with regard to the curriculum?—I have briefly reviewed the curriculum and I will endeavour to point out some of its main features:—

During the first two years a general course of instruction is followed, for we believe whatever occupation a boy or girl may intend to follow there cannot be the slightest possible doubt that a good general education is necessary. It is, moreover, noteworthy whilst we recognise the necessity of this general education we endeavour as much as possible to make the instruction given possess a decided rural bias, as, for instance, in—

Mathematics.—Practical illustrations of the area of fields, the cubic contents of stacks and manure heaps, the principles involved in simple surveys and determining of area of enclosures by a chain survey and plotting same to scale upon plan. Numerous illustrations might be given, but the above will serve the purpose.

Chemistry is treated upon thoroughly practical lines, but instead of dealing with chemical theory or the preparation of useless gases and compounds, special attention is given to such parts of the subject as have a direct bearing upon the chemical compositions of soils, manures, feeding stuffs and the interpretation of their analysis. In this connection it is important to remember that our pupils are not intended to be chemists, and only need such information that can be of value to them in after life. I should have no difficulty in convincing this Committee—if they could visit the school—of the practical value of this work. Boys of 16 years of age can give a fair estimate of the commercial value of a manure or feeding cake from the analysis. Pupils also carry out a rough analysis of soil, manures and feeding stuffs in addition to carrying out actual experiments with a view to testing many problems connected with the chemistry of plant life. In this manner they become thoroughly familiar with the essential constituents of these substances, and consequently are able to bring greater intelligence to bear in their use upon the farm. A special feature is made of the examination of the soil from our garden and experimental plots.

6921. You have a garden attached to the school?—Yes.

6922. But no farm?—No farm.

6923. You visit farms in the neighbourhood?—Yes, we visit farms in the district.

6924. Now you have a very important subject, biology?—

Biology is treated in two distinct divisions. The first dealing with the life history of the common farm and garden plants. Weeds, their identification and eradication. Commercial samples of agricultural seeds are tested and examined, special attention being given to the identification of impurities and germinative power. The structure of roots, stems, leaves, etc., is practically dealt with, each student preparing and mounting sections of same and in this work they become skilled in the use of the microscope. Experiments upon the physiology of plants are carried out in order that the principles

underlying plant growth may be thoroughly understood. The second section of the subject deals with the physiology of farm animals, but no attempt is made to deal with complex details of physiological phenomena; interesting as these details may be to the expert they are of little assistance to the practical farmer, and consequently the subject is treated with a view to placing information of a simple character before the student.

Physics.—In the physical laboratory the construction of thermometers and barometers, their graduation and reading, is dealt with; also the main principles of heat and light are demonstrated. The physical properties of water, radiation, condensation, specific gravities, etc., form a great bulk of the practical work; the whole of the teaching being so directed as to enable the pupils to thoroughly understand natural phenomena as exemplified in the science of meteorology and this is very necessary, as every student eventually becomes an observer on the meteorological station.

Drawing includes freehand, geometry, geometrical construction and design. A strong feature is made of rapid sketching from nature. Simple plans and elevations also receive attention. All practical work done in the manual training shops is preceded by lessons in making working drawings. Principle of design is a very popular subject, and excellent results have been obtained. In all this training the pupils are encouraged to apply the principles taught in making sketches of wood and metal work as they occur in the every-day life of a farm.

6925. Are all these subjects that you have mentioned taught both to boys and girls?—Yes.

6926. What is the length of the course?—Three years.

6927. Then manual training?—

Manual Training is divided as follows:—

For Boys.—Two years are devoted to woodwork. The chief features of the more common timbers, their defects and general properties are first dealt with, actual specimens in all cases being examined in detail. Tools and their uses are next treated, and immediately following this, construction of the various joints, morticing, dovetailing, etc., are done practically. This work leads up to the making of dog-kennels, poultry-houses, beehives, etc. Each boy is provided with a special locker and a complete set of tools for which he is held responsible.

The third year is devoted to exercises in *Metal Work*, which includes special instruction in the chief features and properties of cast iron, wrought iron and steel. The course worked through includes filing, rivetting, soldering, and forge work, and at the present moment the more advanced boys are engaged in the making of a model steam-engine. The metal workshop is equipped with a 2½ horse-power steam engine and boiler, lathe for turning and screw cutting, drilling machine, grindstone, lathe for wood turning, forge and the necessary tools.

For Girls.—An excellent training in good plain cookery, domestic economy, and household management, needlework, including the cutting-out and making of simple garments. The cookery kitchen is well equipped, and affords ample practice in every-day cookery. A well-equipped laundry is also provided.

That is what is done in what you might call manual instruction; or, dividing it into two subjects, cookery for girls and metal work and wood work for boys.

6928. Then literature, I suppose, is for both boys and girls?—Yes.

Literature.—Systematic lessons in English composition are given in addition to the study of our best specimens of literature. History, geography and French are also taught. The latter subject we intend to drop as we are now well satisfied that the time devoted to the subject could be more advantageously utilised in other ways.

Hygiene.—Includes the consideration of the following items: sources and varieties of drinking water, storage of water, wells (deep and shallow), ventilation, nature and uses of food, principles of cooking, soils and sites, disposal of refuse, personal hygiene.

That is practically all that I have got to say upon the school curriculum as taught indoors; the remaining work is chiefly out of doors.

6929. What is the staff of the school giving this teaching?—At present we have the science instructor, a graduate of the London University, also a graduate for literature, and a City and Guilds man in manual

training for manual instruction, the instructor in domestic economy, and I myself do a considerable amount of teaching.

6930. What you have given us exhausts the theoretical part?—Yes.

6931a. You are now going to give us the practical part?—Yes. The garden plots for which each boy is responsible are 1 square rod in area, and each boy is made responsible for the entire cultivation of his plot. The instructor gives demonstrations as to the best method of cultivating the more common garden crops, and these demonstrations are followed by practical work on the students' plot. Trenching, double digging, hoeing, etc., are all done practically. I may say that no part of the school time table is devoted to this work, but spare time is utilised with great success. These plots always present a very practical and workmanlike appearance, and doubtless play a great part in interesting boys in the cultivation of garden crops. This interest is stimulated by the award of suitable prizes for the best managed plot, hence a healthy rivalry is created. The girls are also encouraged in the cultivating of flowers, and each girl is responsible for a border.

6931b. *Experimental Plots* are about one acre in extent and consist of about 70 plots, about 50 of these are sown down with the best varieties of grasses, clovers, and forage crops. The remainder being devoted to demonstrating the effects of manures upon the growth of garden and field crops.

The following crops are under manurial experiment at present:—

Field Crops.—Wheat, oats, barley, beans, maize, turnips, swedes, mangolds, potatoes, clover.

Garden Crops.—Cabbages, cauliflower, peas, beans, French beans, parsnips, beet, carrots, onions.

The *Manures* used include farmyard manure and various combinations of nitrate of soda, sulphate of ammonia, superphosphate, kainit, muriate of potash, and sulphate of potash.

Two special experiments upon potatoes are in progress, the object of which is to test the value of mature and immature seed, also a comparison is being made of Scotch, Irish and Essex grown seed.

We have also put down a series of inoculation experiments upon clover, lucerne, and sainfoin.

A rotation experiment is also in progress for demonstrating the chief features of the four-course or Norfolk system of cropping.

6931c. The educational value of these experiments cannot be over-rated when it is remembered that the pupils cultivate the ground, sow the seed, and weigh, mix, and apply the manures throughout the year, the pupils make periodical and systematic inspections of the experiments in progress, and note down their observations. These experiments have also proved of considerable interest to the farmers of the district, and were last year visited by a party of local farmers some 60 in number. This year they have been visited already by the Agricultural Sub-Committee of the Hertford County Council, and they expressed the opinion as to these experiments being of the greatest importance to both pupils and surrounding farmers. Arrangements are now in progress for demonstrations upon these experiments to be given to a party of farmers from the Easton Estates, and also the Members of the Hertfordshire Chamber of Agriculture.

6931d. Three years ago we conducted field experiments on eight neighbouring farms, but this work had to be abandoned on account of the development of the experimental work at the school. That is practically a very brief outline of the work in connection with plots. Then there is the Meteorological Station. I have brought here a copy of the work done during the last month by a girl 15 years of age and a boy of 13. Those observations and corrections were done by those observers. (*Handing in documents.*)

6932. The school is a second-order meteorological station?—Yes. All those observations and readings were taken by a girl of 15 and a boy of 13 working together. The Meteorological Station is situated in the midst of the experimental grounds, and is a second-order climatological station working in conjunction with the Meteorological Office. Special instruction is given in the reading of the various instruments, the measurement of rain, etc., and boys as well as girls are trained

as observers. The equipment includes the following instruments:—Barometer, anemometer, solar radiation thermometer, minimum radiation thermometer, dry and wet bulb thermometer, maximum and minimum thermometer, rain gauge, evaporimeter, sunshine recorder. The readings are taken at 9 a.m. and 9 p.m. The observers are responsible for the correction of all observations, filling in the necessary reports and forms for the Meteorological Office, etc. I have brought a specimen copy of last month's observations for your inspection. These readings, corrections and entries were made by a boy and girl. In addition to the foregoing, they issue each day a forecast in writing. This is not always correct, but it forms a most admirable part of the training. We attach considerable importance to the teaching of meteorology, dealing as it does with natural phenomena of the greatest importance to cultivators of the soil. The station is inspected annually by the Meteorological Office, and the work of the pupils most favourably commented upon.

With regard to poultry keeping, considerable attention is devoted to this department, the following breeds being kept:—Buff Orpingtons, Black Minorcas, Plymouth Rocks, White Wyandottes, Silver Wyandottes, White Leghorns, Orpington and Game Cross.

The instruction is practical, boys as well as girls being entrusted with the preparation of the food, feeding, cleaning, collection, and recording the number of eggs from the different pens.

Incubation.—A 50-egg Hearson incubator is worked by the pupils during the season, and large numbers of chickens are hatched under hens.

During the season many fowls are fattened and have secured first prizes at the local shows, thus clearly demonstrating the practical nature of the work done.

I have here particulars of each pen taken during last month by two girls, 12 and 15 years of age respectively, whose duty it was to attend to the poultry. These returns show the number of eggs received from each pen. Preservation of eggs in water-glass is a feature of the work during summer time when eggs are low in price.

6933. Do you have a special poultry instructor?—No.

6934. Who gives the instruction in poultry management?—I do.

6935. To boys and girls?—To boys and girls. Bee-keeping is also made a special feature. Fourteen stocks of bees are kept and worked for sections as well as run honey. During the working season the boys and girls take an active part in the general management, and to show that this is quite satisfactory, I might mention that last year we were highly commended in the competition held by the Essex and Suffolk Bee-keepers' Association for the best managed apiary. Apart from this we have harvested 786lbs. of honey from 12 hives, thus demonstrating to our pupils that bee-keeping when properly managed is really a most important item in the list of rural occupations. The greater part of this honey was taken from the hives by boys and girls. In connection with bee-keeping, we grow a collection of the best bee forage plants, numbering some 80 varieties. This is a feature of the greatest importance to bee-keepers.

Fruit Growing forms a most important part of the practical instruction given. The model orchard is planted with all the leading varieties of apples, pears, plums, cherries, gooseberries, red and black currants and raspberries. This orchard was especially planted for educational purposes.

6936. Does that orchard belong to the school?—Yes.

6937. It is the property of the school?—It is the property of the school; entirely under the management of the school. The work of cultivation, pruning, spraying, &c., is carried out by the pupils. The various methods of training are illustrated, whilst practical work in budding and grafting forms a part of the season's routine. The pupils also take part in the management of the fruit trees on the walls of the kitchen garden. These include peaches, apricots, nectarines, plums, apples and cherries. Whilst the foregoing provide ample instruction on modern lines, we have been fortunately situated in possessing one of the worst neglected orchards in the County of Essex, and this has furnished our pupils with a valuable series of practical object lessons on the renovation of old orchards. This

Mr. F.
Hacking.
6 June, 1907.

Mr. T.
Hacking.

June, 1907.

work is still continued during the winter months of the year.

Horticulture.—In general gardening there is ample facility for pupils gaining a very thorough and practical knowledge. The extensive kitchen garden, with greenhouse and numerous panes, afford ample demonstration of the successful culture of vegetables, etc. Last year 13 of our pupils were examined in this subject by the Royal Horticultural Society, each being awarded a certificate.

Dairy Work.—The dairy is equipped with separator, churns, workers, &c., and a training is given in the testing of milk, separation of cream, methods of ripening, churning and making up of butter. Several prizes have been secured by butter made in this dairy.

6937a The school is one of the recognised institutions for carrying out cheap tests for farmers. Since our recognition in January last 13 samples have been received. No cows are kept. The milk is purchased from neighbouring farms.

6938. By whom is the institution recognised?—By the Board of Agriculture.

6939a 6939. The Board of Agriculture has recognised you for carrying out these tests?—Yes, that is so, and since recognition we have done 13 samples for farmers in the district. With regard to drill and sports, we have military and physical drill, and I might say, briefly, that we find considerable benefit from them. Perhaps the most important part of my evidence is really with regard to the place of the school in a general and co-ordinated system of agricultural education. I have briefly reviewed the curriculum and the practical work done, and I think what recommendations I have to make will perhaps be found more fully in this portion:—Whilst we do not pretend to turn out practical farmers, carpenters or mechanics—this, of course, being impossible at school—we contend that they will return to their homes and farms well equipped and thus able to bring greater intelligence to bear upon their work, and, moreover, if they are so disposed, they are in an excellent position to take further advantage of the short courses held by the various County Councils, and may in some instances be able to proceed to agricultural colleges by the aid of scholarships, although there is no attempt to give instruction with this end in view, as we have no intention of preparing pupils for external examinations.

6939b 6939c The short courses for farmers' sons held at various centres suffer very much at the present time through the lack of suitably prepared material, and many of the staffs at our various agricultural institutes have pointed out that a considerable proportion of the students attending these courses have had a very limited elementary education, and, consequently, fail to reap any practical advantage from the instruction there given. In fact, it is nothing more than a waste of public money to keep these instructors employed in teaching simple arithmetic in order that the pupils may comprehend the meaning of an analysis of a manure or feeding-stuff. County councils should see to it that schools of the type of our own are liberally supported, in order that they may act as feeders to the higher institutes where instruction is given or where winter courses are held. Without such co-ordination they cannot hope to secure returns commensurate with the outlay. Our school supplies this deficiency, because the whole system of instruction given comes between the elementary school, on the one hand, and the places for higher instruction in agriculture on the other. If this state of things became general, there would be no waste of the expert's time and patience. His pupils would have nothing to unlearn, and moreover they are well grounded in the three R's, and the simple principles underlying the composition of soil, manures, and feeding-stuffs. And again, if a rural community can be educated on the lines we have outlined, then, and only then, can the peripatetic lectures given by our county councils be fully appreciated.

6939d Up to the present enormous sums have been squandered in giving useless lectures and so-called technical instruction to rural audiences, who are in no sense prepared to profit by the learned discourses held for their special benefit. Generally speaking, these lectures are only moderately attended, and in very many cases never reach the community for whom they are really intended. In our own district, the lectures are attended by grocers, tailors, shoemakers, etc., who go really to see the magic-lantern show. I attended one of these lectures a short time ago, and out of an audience of 33 only two farmers were present. There is only one

remedy for this state of things, and particular attention must be given to the education of the rising generation. We have already seen some effects from the instruction given, and many of our pupils are now engaged in practical work on farms—and these will doubtless form, in the future, part of the rural audiences of future county council lectures. In fact, they have been trained where to look for information. They are thoroughly interested, and from their ranks our most practical farmers of the future will arise, and moreover we shall then see beneficial results from a wise expenditure of public money. The county councils have the remedy entirely in their own hands. Up to the present large sums of money have gone to elaborate technical schools for the urban districts, which are in turn supported by a large number of scholarships, whilst the education of the rural community is literally starved. I could fill our school to-morrow with bright boys and girls if the parents possessed the means, and hard-working tenant farmers have told me they would willingly send their children if they could afford it. With them this is no mere matter of talk, as I know many of these farmers intimately, and believe their statement to be perfectly true. It is for the children of farmers of this type that I strenuously urge the creation of more scholarships. They are the real backbone of our English agriculture, and if our farming is to maintain a position, not to speak of supremacy, in these days of our ever-advancing competition, we must see that the future workers are suitably equipped for the struggle before them.

6940. How many boys and girls are there at the school at this moment?—31 on the books just at present.

6941. Are they mostly sons and daughters of farmers?—Not entirely so. As I pointed out before, the rural community is a very complex one, there are rural tradesmen, and one thing and another, that one has to consider, and as a result I should say about 40 per cent. at the present moment are sons and daughters of farmers, the rest of course are the sons and daughters of village tradesmen, the village blacksmith, or something of that kind, all more or less dependent upon agriculture, but yet cannot be called farmers in any sense of the word.

6942. (By Lord Barnard.) In some cases those village tradesmen may perhaps be occupiers of agricultural land?—They are to a certain extent. I have several instances in mind in our own county where they have small holdings, possibly of about three to five acres. In that connection, of course, the instruction given would be extremely valuable in their case.

6943. (By the Chairman.) Your main object, of course, is to recruit the sons and daughters of farmers of the country?—Yes.

6944. You do not exclude the other section of the rural community; but that is your main object?—That is our main object.

6945. Do I understand that you are hoping to get a grant from the Technological Branch of the Board of Education?—The Board of Education have just recently recognised us again under the Technological Branch, and, I should imagine, as a result of this year's working we shall receive in the way of grant possibly somewhere about £100, dependent entirely upon the way the work is appreciated I suppose.

6946. Do you expect to obtain any grant from the county?—Yes, we do. I suppose before another month or six weeks have elapsed we shall receive a grant from them.

6947. The boys and girls at the schools go back to the farms?—At the present moment we estimate that something like about 40 per cent. of them go back to farming.

6948. What becomes of the 60 per cent?—They go into the villages, and they in some instances follow various occupations in connection with village tradesmen—some of them become carpenters, and so on.

6949. They do not go into the town?—Not now, they did formerly. That was rather a curious feature of our experience, especially when we dealt more or less on a purely secondary line.

6950. Now the Board of Education will look upon this institution as a technological institution?—Yes, rather in that light.

6951. Of course you will not then come under the

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inspection of the Secondary Branch?—We should come under the Technological Branch.

6952. Have you been inspected by the technological inspector?—Yes, and I have a copy of their report here. If I am in order in reading it I should be very pleased to do so.

6953. Yes.—This report only came about a fortnight or three weeks ago as the result of their inspection.

6954. Can you give us the substance of it, and leave the report with us?—Yes. They compliment us very highly on our teaching in all branches of the work, and especially do they compliment us upon the practical instruction, the management of our experimental plots and fruit growing. They say: "The care and intelligence with which this practical work is done by the pupils, and the general good order of the gardens, experimental plots and poultry runs, speak well for the agricultural and horticultural teaching." That is briefly the substance of it—they compliment us all the way through on the excellent character of the teaching given. They wish us to make one or two modifications.

6955. The report of the Inspector is very satisfactory?—Very satisfactory indeed.

6956. (*By Mr. Medd.*) I think you stated that Lady Warwick transformed Bigods Hall into a school. Did she convey it in any way to anyone?—No, she did not convey it to anyone.

6957. Then how is the school exactly held to-day? Is the school held at will upon her premises, or is there a lease?—It is just held at will upon Lady Warwick's premises.

6958. I suppose you have it practically on a yearly tenancy?—The place belongs to Lady Warwick, you see.

6959. I meant the school?—The school also belongs to the same estate.

6960. You have a governing body?—Yes.

6961. That is more or less of a representative character, is it not?—Yes, representative of the district, and there are also some county representatives upon that body.

6962. So that of course Lady Warwick could not close the school at a moment's notice?—No.

6963. Apart from that, it merely exists at present at her pleasure?—That is so.

6964. From your evidence, and from the last report to the Board of Education, it is obvious that the school is meeting a definite agricultural want?—Yes, they conclude their report by saying: "The school not only serves a district which is otherwise poorly provided with the means of higher education, but affords a type of education afforded by no other school in this part of the country, and on both grounds it is worthy of support."

6965. It is very desirable, is it not, that the school should be placed on a permanent basis?—Yes, it is desirable that something should be done in that way.

6966. I believe suggestions are now under consideration for incorporating it more closely into the Essex general scheme of education?—Yes, that is so; they have had it under consideration during the last two or three meetings of the County Council.

6967. You mentioned just now that the area served by the school comprised something like a five or six miles radius?—Yes—that is for day pupils.

6968. That would include Dunmow?—Yes.

6969. What is the actual distance from Dunmow?—Two miles.

6970. You are familiar with Professor Sadler's report on Essex?—Yes, I know it well.

6971. Professor Sadler suggested that a school of the higher elementary type might be provided at Dunmow?—He did.

6972. No steps have been taken yet to provide such a school, have they?—None, whatever, to my knowledge.

6973. You are probably familiar with such schools as exist in France, for instance?—Yes.

6974. There would, I imagine, be no difficulty in so organising Bigods, as to comply with the requirements of the English Boards and to supply that grade of education for Dunmow and the surrounding district?—No, there would be no difficulty at all, I think.

6975. It would probably tend to a large increase of pupils?—Yes, I think so, because once a definite scheme like that was put in operation, then, of course, there could be some systematic method of feeding the school from the surrounding elementary schools.

6976. What is the actual distance from Dunmow? Is it within walking distance? It is about three miles, is not it?—To Dunmow Station it is 2½, but really to Dunmow it is not more than 2½.

6977. Lady Warwick talked about getting a motor van. Has she one there now?—Not a motor van, but during the winter months—that is in the worst months of the year—we run a brake between Dunmow and the school.

6978. If your school were developed at all upon its present lines, or more in the nature of an *école primaire supérieure*, it would serve not only Essex, but possibly Hertfordshire?—Yes, I think it is very desirable that that view should be kept in mind. The school with its equipment, and so on, could easily serve two or three authorities round there.

6979. You referred just now to a visit from the Hertfordshire farmers?—Yes.

6980. Could you give the Committee their impressions of the visit?—Yes. I have a letter from their secretary. This is the letter I received from Mr. Dean the day after their visit. He says: "Dear Mr. Hacking,—You will be pleased to know that the gentlemen forming the deputation who visited your school yesterday were very favourably impressed with what they saw."

6981. That is very satisfactory. Have you any idea whether the Hertfordshire County Council propose to subsidise you in any way?—Only this: that seeing that the Hertfordshire County Council had given up their grant to Ridgmont, I suggested that the sub-committee should then visit Bigods with a possibility of making a grant to the school, and several members, the vice-chairman in particular, said he did not see any reason at all why they should not make the school a grant, and I think, after the very favourable expression which they have given voice to in this letter, that they will seriously consider the question of giving a grant to the school. I have already officially applied to the Committee for one, and I daresay it will come before them at their next meeting, or at any rate in the near future.

6982. I believe it is a fact that the more the farmers visit and see your school the more they appreciate it?—That is so.

6983. Lord Warwick personally interests himself in your work, does he not?—He does.

6984. And when at home is more or less in touch with it?—Yes. Speaking of the visits of farmers, I had a letter from a farmer the other day, a member of the Hertford Chamber of Agriculture. I, of course, had invited them, and I pointed out to him that it was desirable that more farmers should visit the school, especially the agricultural part of it and he says, "I shall be very pleased indeed to advise the members of our Chamber to visit your school. I think it a great pity that such excellent work as you are doing is not better known and more appreciated," so that he is endeavouring to influence the Hertford Chamber of Agriculture to visit the school, or at any rate to send a deputation. That is from Mr. Graham, he is a Councillor for a division near Bishops Stortford.

6985. There is no other school in England of this type?—Not that I am aware of. Of all the schools that I have visited, and I have visited all those that have any pretension to this kind of work, I do not know that there is any on exactly the same lines as ours.

6986. I do not think they claim to be. The whole of this is due to private initiative and private generosity?—That is so.

6987. (*Professor Middleton.*) Might we have just an idea of the cost of maintaining an institution like this?—At the present moment it is about £750 or £800 a year.

6988. I gather from what you said that you did not not approve altogether of the county lectures which you have heard?—No, I did not.

6989. Is your charge a general one against county lectures, or is it against one particular type of county lectures?—Very possibly it may be the particular type we get in Essex. Of course I would not for one

Mr. T.
Hacking.

6 June, 1907.

Mr. T.
Hacking.
6 June, 1907.

moment say that county lectures, generally speaking, are not valuable, but as we get them in our particular district I do not think they do much good.

6990. What is the trouble, do they deal too much with general principles and do not go for specific points?—My chief objection is that they rather deal with a too technical aspect of the thing. I do not think there is an attempt made to simplify it.

6991. So that they are above the heads of their audience?—Entirely above. I can give you a very humorous illustration which occurred to myself after attending this particular lecture which I referred to in my evidence. I was coming down the road, and evidently a very ordinary sort of man came along behind me—it had fallen to my lot to move a vote of thanks to the lecturer—this man walked along with me, and said, “Well, Sir, what do you think of these lectures?” I said, “Well, they seem all right, do they not,” and he said to me, “I do not know. That man must have been a clever man, but we practical men do not understand these ‘alblumenoid’ things that he has been talking about.” The lecturer had been talking about the composition of foods, so that it was entirely above them.

6992. Have you given any lectures on local experiments?—Yes, I have given some myself. For my own lectures I must say I have been very well satisfied with the way they have been appreciated, but they have been of rather a different type; they have been market day lectures principally.

6993. Have you had lectures given on the results of experiments?—Yes, and with very good results indeed.

6994. So that your remarks are applied to the type of lecture which deals with general principles?—Yes, rather than to special subjects.

6995. When there is a definite object chosen and put before the farmer there would not be the same lack of interest in the lecture you think?—No. I have found myself that very often when a lecture supposed to be an agricultural one has been given in Dunmow, all Dunmow has turned out and attended it, tailors, grocers, tradesmen, and all the rest of them, and you will find practically no farmers there, and yet that subject is supposed to be one which is specially interesting to agriculturists. As a result of that, of course, it is mere money wasted. Take the other case; I gave some time ago a special course of lectures to farmers on market days in connection with the Hertford County Council at Bishops Stortford, dealing with the practical side of many experiments, not only in the district, but also experiments carried out by investigators, and the average attendance at those lectures ran out at about 40, and they were thoroughly interested from beginning to end, and in fact since then I have really had more demand for lectures than I can fulfil.

6996. (*The Chairman.*) Who pays for the lectures?—The Hertford County Council in that case. I have not done any lecturing for the Essex County Council.

FIFTEENTH DAY.

Tuesday, 11th June, 1907.

PRESENT :

The Right Hon Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.
Lord MORETON.
Mr F. D. ACLAND, M.P.
Mr. THOMAS LATHAM.
Mr. J. C. MEDD.

Professor WILLIAM SOMERVILLE, D.Sc.
Professor T. H. MIDDLETON, M.A., M.Sc.
Mr. A. E. BROOKE-HUNT (*Secretary*).
Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. H. C. HOWARD, called and examined.

Mr. H. C.
Howard.
11 June, 1907.

6997. (*By the Chairman.*) You are a member of the Cumberland County Council?—I am.

6998. You are prepared to give the Committee some information as to what you have done in Cumberland with regard to agricultural education?—Yes; as regards the Newton Rigg Farm School more particularly.

6999. Please.—To begin at the beginning we endeavoured first of all to start a school with Northumberland and we had very nearly got that settled up, but unfortunately at the end they preferred to have their school nearer Newcastle, and so that threw us off. We therefore entered into negotiations with Westmorland, and in 1896 we took a lease of a farm of 116 acres about a mile and a half to two miles away from Penrith. In 1897 we bought the farm. The agreement with Westmorland was that they should pay, say, £100 a year towards the cost, and the net cost to Cumberland during the last five years of carrying on the farm has been on the average £658 a year. The highest was in 1893, when it was £694, and the lowest was in 1895, when it was £598. Of course, out of that we pay £250 for interest on the purchase and on the improvements that we have made. The capital that we have expended up to date is £9,582. Towards that Westmorland paid us £300, but we are paying them back at the rate of £50 a year, because they prefer not to own any part of the farm, but to pay us a certain sum of money a year. We have almost paid off that £300—I think we have got another

year or two, and then the whole of the place and all the stock and everything will belong to Cumberland. As regards the money that we have devoted to agriculture I do not know whether that would be interesting?

7000. Yes.—We have received from what is generally known as the “whisky money” on an average £6,500 every year, and very early in our proceedings we arranged to devote £2,000 a year to agriculture, but, as a matter of fact, we have never spent that £2,000—I think the average has been about £1,400 a year. This school has cost us £650 a year. I might say the dairy van was the first thing we started; before we thought of the farm we started the dairy van to go round the country and teach the people a better system of making butter. That has been very successful; it really was so successful that it induced us to embark on the larger undertaking—the farm. The dairy van costs us about £250 a year, experimental plots about £100, gardening £150, and in addition to that there is something towards poultry keeping, and a grant which we give to the Bee-keepers’ Association. I am sorry I have not got the totals for those, but the total amounts to about £1,400 a year. As regards the dairy van, we have had since we established it about 2,000 pupils who have passed through, and I think on the whole our dairy teaching has been very successful, and has done a considerable amount of good work. A number of our students at the farm get very good places as dairymaids, and I think everybody is

7000a

*Mr. H. C.
Howard.*

11 June, 1907.

agreed that the making of butter has certainly progressed very considerably in the right direction since we started the dairy van and the farm. We are very anxious in Cumberland about taking up the question of gardening in the elementary schools; we have not done a great deal so far in that. I do not know whether one should say anything about that before this Committee?

7001. Yes; give us the information by all means.—We are trying to push that as much as we can, and I should very much like to see myself steps taken so that all pupil teachers who go to secondary schools should have opportunities given them to learn at all events the elementary parts of agricultural work, especially gardening and botany, so that they might be qualified when they take village schools to teach the children all those things which are so essential to keeping the people on the land, which is the great cry nowadays. I hope that the Government may see their way to assisting this movement, as, I say, by making it compulsory in the secondary schools in the country that pupil teachers should be taught the elementary principles of botany and the principles of gardening, and so on. I do not want to go farther than that, but I want them to be qualified when they become teachers in elementary schools to teach the children there those subjects.

7002. You think an elementary school in a rural district ought to have a garden attached?—I think so certainly.

7003. You have several of these school gardens in operation?—Yes; I forget the exact number.

7004. They are under the superintendence of your horticultural instructor?—That is so. Then we give lectures on poultry keeping by the dairy teacher at the farm in the winter time when the girls are not there. The boys are there all the winter. She has more time then, and she goes round the country giving lectures on poultry keeping.

7005. That instruction in poultry rearing is given during the winter months?—Yes.

7006. To the boys?—It is given by lectures round the country, not at the farm itself. Of course it is given at the farm, but in addition to that the dairy teacher goes round the country and gives lectures at villages upon poultry keeping, and, as far as my own knowledge is concerned, it has done a considerable amount of good I am sure, because the amount of poultry which is kept now has enormously increased to what it was 10 or 12 years ago.

7007. Those lectures are well attended?—Yes, very well attended. I might perhaps say one or two words as regards the Government grants which are paid. I think it would be a great improvement if the Government Departments would agree to unite, and that we should not have to deal with so many departments. I must say that I think the Board of Agriculture's system of paying a lump sum is far preferable to the way in which the Board of Education pay by head or by a certain number of hours. If the grant was given in proportion to the good work which the inspectors of the Government thought was being done in a lump sum, it would materially help us in many ways, and I think it would save an enormous amount of time to the officials, and to the people in London as well as to our own, a great deal of whose time is now taken up in going through these absolutely unnecessary, and, I think, ridiculous details which are sent down, and which are of no service to anybody really, because, so long as the Government do not pay more than their inspectors vouch for as being a proper share which a school in which instruction of any kind which is given by the County Council is worth, I do not think that they need go into any other details. They might leave the rest to the local authority which, after all, is on the spot, and which knows the peculiar circumstances of the case a great deal better than any Government inspector can possibly know them, and I am sure it would be an enormous relief to our own officials and also to the Government if we could have a lump sum handed to us as I say calculated upon the amount of work which the inspector thought we did in the year in the subject.

7008. You are aware that the system of paying a lump grant is now adopted by the Board of Education?—Well, you see we are dealing with three separate Government Departments practically, the Board of Agriculture, the Board of Education, and the Local Government Board; they are all mixed up, and we never know which to apply to, and we are always afraid that if one pays a grant we shall not get it from the other. That is the opinion of our Secretary of Education as well, that we should do far better if we could deal with one Government Department only. You mentioned that the Board of Education pay a lump grant. In what way do you mean that they pay a

lump grant? They do not pay a lump grant as regards elementary schools and evening classes.

7009. I understand they pay a lump grant to institutions such as yours?—Yes, that is so.

7010. But your opinion is that there would be a great advantage in centralising the work in one department?—Yes, I think so.

7011. What is the attitude of the farmers towards your school?—I think I had better leave Mr. Tinniswood, who is a large farmer in the North and who is here, to give evidence on that point.

7012. Are there any scholarships at your school?—Yes; we give a scholarship every year. If a boy does sufficiently well he can take a scholarship at the Durham College of Science.

7013. Do you have many boys from the elementary schools?—Yes, a good proportion. Sometimes it may be a year or two before they come. They come at a good age, many of them—they have generally done a year's work on a farm meanwhile, and they come on to us for the winter.

7014. Your school is mainly a winter school?—Yes, for boys, and in the summer for girls.

7015. So that your staff is always busy?—Yes, they are always busy because if they are not engaged regularly at the farm, they give lectures. They are always kept fully employed the whole year round. The lecturer, Mr. Lawrence, is here to-day and he will be able to give you all the details as to the work.

7016. Lectures are given on agricultural subjects?—Yes; round the country. In fact throughout Cumberland and Westmorland now.

7017. Are they well attended?—Yes, as a whole, very well.

7018. I suppose the lectures are in connection with the experiments?—Not altogether—various subjects. Mr. Lawrence himself gives a number of the lectures, and he will be able to tell you all about that.

7019. Do the farmers come to the farm to watch the work that is being done at the farm?—Every year there is a certain number of farmers who always come to the farm and look round and see what is being done. I wish there were more. The numbers increase, I think. We had a visit the other day from a number of Essex dairy farmers who came up into the county and looked round; they also visited Mr. Tinniswood's farm at the same time.

7020. Dairying is the principal subject you take up at the farm?—Yes, in a way it is, but in the winter the boys are taught everything they can possibly want to know as far as we can give them instruction on the farm, that is to say, book-keeping and surveying, and all sorts of things.

7021. And farriery?—No, they do not learn that.

7022. Do you do any cattle breeding?—Yes.

7023. And sheep breeding?—Yes, we have experiments in sheep breeding.

7024. You also have fruit plots?—We have a fruit plot. That is more modern rather; I do not think we have had that more than five years.

7025. Have you an agricultural Committee?—That is a Sub-Committee. That is a Joint Committee of Westmorland—the two counties are joined together on the Agricultural Committee.

7026. (*By Lord Barnard.*) When you agreed to set apart £2,000 a year for agricultural education, did you go on any particular basis for arriving at that figure?—Yes. We took the amount that we received, say £6,500, and we thought that £2,000 was a fair proportion to devote to agriculture out of the money. Of course, we had other interests to attend to—mining, fishing, and so on, and we thought £2,000 a fair proportion for agriculture and that we could spend it usefully; but so far we have not spent as much, because we did not think we could spend it profitably, and we have not gone beyond what we thought we could properly do.

7027. I suppose Cumberland is mainly an agricultural county?—Yes. There is a good deal of mining, of course, in parts.

7028. I do not understand how it is you have not been able to spend more than £1,400 on agriculture, but you have practically given us the answer just now that you thought you could not spend it usefully?—No. I think we would have been very glad to have spent more on agriculture if we felt we could have done so with profit.

Mr. H. C.
Howard.
11 June, 1907.

7029. I was disappointed a day or two ago on reading the printed Minutes of Armstrong College, to see that you had intended to decrease the amount hitherto spent on experimental plots?—That is so. We have had those plots going for a considerable time, and it was the opinion of the Committee that with the exception of keeping on two it would be no more use to the county to keep them going, and, as you know, the question of secondary education has been forced very strongly to the front lately, and we are now about to build four or five secondary schools in various parts of the county. That is going to cost £30,000 or £40,000, and it was necessary to look round to see whether we could save money. We had a Committee sitting in the winter for that purpose. We had to try and save all round, and although, of course, we did not want to, we endeavoured to cut off as much as we could. Our object was to save £1,000 a year.

7030. Are you anxious to obtain further financial assistance from the Government?—Yes, I think we are entitled to it: and there is no doubt we could spend it usefully if we got it. Of course, it is merely a question whether we are to tax the ratepayers heavier, or get the money from the Government. I think we are hard enough on the ratepayers as it is.

7031. You think if you had more money you could usefully expend it?—Yes, I have no doubt we could.

7032. The Farm Committee, I think you told us, is a Joint Committee of the two County Councils?—Yes.

7033. It reports to both of them I suppose?—Yes, a report goes to both.

7034. Who keeps the accounts?—The accounts are kept by the manager.

7035. Do they pass through the County Council offices?—They pass through our office, not Westmorland, because Westmorland is merely a contributory Council. They appear every year in our financial statement.

7036. I do not know whether your school is full or not—perhaps Mr. Lawrence can tell us that?—Yes.

7037. Do you think it would be possible to induce students to come from the neighbouring counties—say the county of Durham?—We have outside students, not many. I should think in the last two or three years we have had perhaps half a dozen or more. We have had students from Scotland, and we have had them from the south of England.

7038. Supposing, for instance, your county were to communicate with the county of Durham, and say "Here we have got this institution and we are willing to take in students," and so advertise the advantages which you have got to other county councils, do you think that could be usefully done?—Of course, Northumberland has its own school in the same way as we have.

7039. Northumberland has no school, I think?—It has got a farm.

7040. They take no pupils?—I thought they did. Of course we are limited in amount; we have not room for more than eight or ten at a time, and it would necessitate considerable building if we were to go in for a scheme of that sort.

7041. I was putting the question rather from the view that if you had more national money could you make your school better for national purposes—of course on payment by the scholars?—We really take our own and Westmorland children at a mere nominal sum. The boys pay £4 for the winter, that is, for their keep and teaching and everything, and the girls pay nothing; so that we give them instruction very cheap. We should have to give it a good deal of consideration, and it would mean seeing where we were to get a large capital sum from.

7042. What I was suggesting would not apply to your school only but to all the schools in the country. The instruction at your school is not limited to teaching young men and women agricultural and dairying knowledge, because I see you give lectures to farmers and so on?—Yes.

7043. And probably information to farmers?—Yes.

7044. Should I be right if I considered an institution of this kind not only an institution for giving education but an institution for collecting and disseminating information?—I think so. You might describe it as such; we issue leaflets and so on.

7045. And work in connection to a certain extent with Armstrong College?—Yes, we do, and we have been very

grateful to them for the assistance which they have given us. Mr. Murray comes over to us from the Armstrong College.

7046. Do many of your boys go to Armstrong College?—I do not know that many of them have gone there, but the last three scholarships have gone there.

7047. (By Lord Moreton.) I do not think you have told us the average age of your boy pupils?—I think probably the manager would be better able to answer that, but I should say from 16 to 24.

7048. Do you find that the farmers' sons attend the lectures, and the younger people, or do you find that they leave it to their parents to come?—I think they do; certainly at first there was a difficulty in getting them to come, but they are much better than they used to be.

7049. That applies to the younger ones?—Yes.

7050. I suppose you would confine the instruction you have mentioned to teachers who intended to take up posts in rural schools?—Yes.

7051. They have a good many subjects to take up, have they not?—Yes, but a great many of them might be dropped to advantage to my mind.

7052. (By Mr. Latham.) What might be dropped with advantage?—I think I must leave that to people to form their own judgment upon, but my opinion is that there are a good many things which really might be dropped which are not nearly as necessary as instruction in botany and horticulture and agriculture. They are much too fond of science and art now. That is only my own opinion, but I think anybody going through the list might strike out a few things which are not so important to the life of the country as these agricultural pursuits.

7053. That applied rather to science?—Yes, all these things do for a limited number of people—French and German, and so on, and Latin and Greek. I think the great majority in the country would be far better if they were taught to understand the things which really belong to the country, and which really should form part of their life when they grow up, instead of being taught a lot of outside things which are probably no use to them whatever.

7054. You think a highly practical knowledge is of more value to the agriculturist than the scientific knowledge?—I think both are of value, you cannot take one and say this is the most valuable. I think they are both valuable. I do not think scientific knowledge is of any use without practical knowledge.

7055. Could you give us a little more evidence about your dairy teaching, or would you rather leave that to another witness?—I have not got up the statistics, and I should not like to speak just from memory; I would rather leave that to the manager.

7056. With regard to your lectures, who were the principal people that attended them?—People in the villages. It depends a great deal, of course, on what subject is taken up. For instance, if you have gardening, everybody in the village would come who was interested, because they all have their little gardens, and they want to know what they can about it. We have had lectures of all sorts. I think Mr. Lawrence, who gives a great many of our lectures, could tell you what his audiences are like better than I can.

7057. What is the class of pupils you get?—A good many of them are farmers' sons, but a certain number come out of towns who wish to take up agricultural pursuits.

7058. What are those people who come out of the towns; whom do they represent?—The small shopkeepers and that sort of person.

7059. Do you have any men that are likely to go on as surveyors and land agents and that sort of thing?—I think so. If they choose to go on they would get a foundation there which would carry them on, but I do not think many would, because most of them come from farms and go back on farms.

7060. You made a remark just now about taxing the ratepayers. Provided all this money goes to secondary education which used to be used for agricultural purposes, it will be very difficult to keep up any agricultural education at all I suppose?—I hope we shall keep it up as much as we have done.

7061. Do you find your County Council are inclined to limit their expenditure on agriculture in consequence of the demands for secondary education?—No, I do not think so. They are anxious to limit the expenditure all round as far as they can, and agriculture has to suffer as well as everything else.

Mr. H. C.
Howard.

11 June, 1907.

7062. With regard to these new schools that you spoke of building, and which will cost you £30,000 to £40,000, if that is to come out of the money that formerly was used for agricultural purposes, will not that lessen the amount of money that you have at your disposal?—It will take some of it away. For instance, as Lord Barnard was asking about these plots, that was one of the things we thought must disappear, because we wanted to limit the expenditure on agriculture, and those things which we thought were less important we have struck off, so as to enable us to have more money for the secondary school work.

7063. Is it fair to ask you what you have struck off, or had I better ask another witness that?—I am afraid I ought probably to have refreshed my memory on that point. We have made a saving, as we hope, of about £1,000 a year in what we have been spending out of this "whisky money." We have struck off a considerable amount from a different number of things. Evening schools, I think, have to suffer more than anything else.

7064. Do you carry out many experiments at the farm?—Yes, we always have some experiments going on.

7065. Do you carry the experiments out over the county as well as at the farm?—We have had these plots of land in various parts of the county which have been going on now for a considerable number of years, and I think we have learnt about as much as we possibly can learn from them, and that is the reason that we were only going to keep one or two going.

7066. In consequence of your spending less money the experiments will suffer?—Everything has to suffer. We have less money to spend on everything, and we have to strike out those which we think are least important.

7067. That is a good reason for your asking for more?—Yes, I should say so myself.

7068. Although you have struck off all those different things, you have not lost any idea that they are of value to the country?—I do not say they are not of value, but I say we have struck off those things that we consider are less valuable to the country.

7069. That is not what I wanted to know. If you had had money to spend would you go on again very much on the same lines that you went on before?—Yes, we might alter them a little as it appeared to us was better.

7070. Have you ever done anything else besides experiments? Have you ever done anything in the farriery line?—No, except that we have had lectures given round the country.

7071. Who has given those lectures?—They have been given by people selected in the different districts who understand the subject, but we certainly have not done much in that way for some years. I think we did a lot of that kind of work at first.

7072. Were the lectures well received?—Fairly well, I do not think they took extremely well, because they did not appeal to a great many. You want to have them more in big centres and get people from the various villages all round to come in. In a village you would hardly get a big enough audience to justify giving a lecture.

7073. Possibly you would if you held them in the market towns?—Possibly. If you held them there no doubt it would be a very useful thing.

7074. Do you consider the agricultural community of the district value this education?—I do.

7075. Is that the younger or the older men?—I think they both do. There has been a great change of feeling amongst the older members: they were very much against this at first, but most that I speak to now are in favour of it, and think it is doing their sons a great deal of good. All the young boys who are there appear to like the work and take a great deal of interest in it, and I have no doubt in my mind they are a good deal improved by the training they receive.

7076. You can see a much larger field of work, provided you had funds at your disposal?—Yes, of course we could extend no doubt.

7077. (By Professor Middleton.) What did you say was the total amount of capital expended on the farm by the county?—£9,582.

7078. You have purchased the land and buildings?—Yes; a good deal of that was improvements of buildings.

7079. What is the area of the land?—116 acres.

7080. The cost of the school is about £600 per annum?—Yes.

7081. That is exclusive of any interest on the capital outlay?—No, that is inclusive of everything.

7082. The total cost of the school inclusive of everything is £658 per annum?—Yes.

7083. (By Mr. Medd.) What is your exact relationship to the Armstrong College?—We agreed to pay them so much for the work they did for us; for instance, they examined the students at the farm and then they assisted us with these experimental plots, and now we are paying them so much towards Mr. Murray's work as the teacher of gardening.

7084. Do any large proportion of your pupils go on to the Armstrong College after they have left you?—We have had several—not more than the one who gets the scholarship. He goes on as a rule. I do not think any of the others have gone, so that would be one a year, although I do not think we have each year had one.

7085. Have you ever considered how far your farm school might be made a permanent institution in connection with the Armstrong College?—No, I do not think that has ever been considered.

7086. It is desirable in each area to have varying grades of institutions, that is to say, the higher grade at the Armstrong College, and possibly an intermediate grade elsewhere?—Yes.

7087. Possibly your school here might fulfil that function if it were developed?—Yes, it might. Of course it would be better really if other counties had schools similar to ours, which might feed the Armstrong College. There is no doubt that each locality would be far better with a school of this sort in which to train their own people.

7088. One feels that each county cannot afford the expense of maintaining an institution of this kind, and that probably one or two counties must combine, as you do?—Yes.

7089. Unfortunately we have not got the *precis* of your evidence and that of the other witnesses before us?—No.

7090. They have gone astray?—Yes, I am very sorry.

7091. How much land have you connected with your institution?—116 acres.

7092. How many pupils have you as a rule?—We take about eight boys in the winter. We have four courses of girls in the summer—about eight or ten at a time.

7093. Could you accommodate more?—No, we could not, we are full up with that.

7094. Do the two counties, Westmorland and Cumberland, jointly support the institution?—Westmorland pays a contribution to Cumberland of £100 a year.

7095. I see £125 is put down here?—They gave us £300 when we purchased the farm and bought the stock and made the improvements, and we are paying that £300 back at the rate of £50 a year.

7096. Then it costs Cumberland about £500 a year?—About £658.

7097. Is there any complaint in Cumberland as to the expenditure of this money?—You find certain people certainly who complain, but they get fewer and fewer I think.

7098. Of course, the number of students, eight or ten, is a comparatively small number, is it not?—That is so.

7099. You do not think you could attract more?—I think that probably we could now if we built, but we should have to make an extension; we have not the room; we have already built four new bedrooms, and we should have to build any more that would be required.

7100. That, of course, could all be done if some such idea as I have in my mind could be carried out, namely, that your institution should become the intermediate institution for the northern group of counties?—Yes.

7101. Not merely being confined to Cumberland and Westmorland, but providing equally for Durham and Northumberland?—Yes. That would mean, of course, a complete change of everything; we should have to have fresh governors—governors drawn from all quarters.

7102. Yes. There is a great absence of facilities for the sons of small farmers, is there not? As a rule we cater for the advanced man at the collegiate centre, and there is very little done for the lad of 15, 16, or 17?—Yes.

7103. Do you cater for him here?—We do.

7104. Of course such an institution as yours is capable of development?—Yes.

Mr. H. C.
Howard.

7105. Do you do anything for the training of elementary teachers?—No, nothing.

11 June, 1907

7106. Do not you think it would be possible to hold courses on Saturday afternoons for elementary teachers?—I think our employees' time is all filled up, and that they could not possibly do anything more as it is. With regard to what you said about our serving the four northern counties, I still think it would be far better if they were more scattered—I mean if you had one of these schools in Northumberland; ours to serve Cumberland and Westmorland, and perhaps one for Northumberland and Durham. I do not think it would be an advantage to have one large school in one county.

7107. What is your capital expenditure so far?—About £9,500.

7108. That is a large sum to raise to-day?—Yes.

7109. It is becoming increasingly difficult to raise money?—It is, but, of course, if Northumberland and Durham wished to join us we should expect them to pay.

7110. They would pay you an annual sum?—I do not know that we should do that for another county. We did do it for Westmorland, but I am not sure that we should do it again.

7111. Perhaps not, but, however, it is a matter that might be considered?—I quite agree, it might be considered.

Mr. ROBERT TINNISWOOD, called and examined.

Mr. R.
Tinniswood.

7112. (By the Chairman.) You are an Alderman of the Cumberland County Council?—I am.

7113. Chairman of the Cumberland and Westmorland Joint Agricultural Committee, and a member of the Committee of Management of the Newton Rigg Farm School?—I am.

7114. You are a representative of the Cumberland County Council upon the Agricultural Committee of the Armstrong College?—I am.

7115. And a member of the Council of the Cumberland and Westmorland Chamber of Agriculture?—That is so.

7116. Perhaps you will explain to the Committee what the relationship is between the Newton Rigg School and the Armstrong College?—The relationship consists very much of the grant made to the College and the services we get in return—lectures in forestry and so on, and the oversight of the experimental plots that we have had. Then we give scholarships to the Armstrong College for the most suitable pupils. Of course it is by examination that they are qualified to go there. I think those scholarships run for one year each and are renewable for 3 years. I believe we are running one now for the third year, and I think for the second as well, so that we may have three running concurrently in that way.

7117. Some of the boys from the Newton Rigg School go to the Armstrong College?—Yes.

7118. Straight from your school to the Armstrong College?—Yes, after they have passed the necessary qualifications. Formerly we contributed £200 a year to them, and in return we got lectures from them, and they also superintended the experimental plots. I think they consisted at one time of 20 hay stations, 6 rotation experiments and some turnip and potato plots. We have now largely reduced the number of plots, and consequently have reduced the grant that we made to £70. We thought that the time had come when there might be a fewer number of these experiments and that the publication of the experiments that had been carried out in the past was all that was required to be done; and because the farmers themselves had taken considerable advantage of those experiments and had learnt practically all that was to be gained by them, and also because the farmers upon whose farms the plots were were getting somewhat tired of it. The consequence is that we thought four central plots would perhaps be sufficient in addition to the one that we have at the Newton Rigg Farm. My own opinion is that more might be done at Newton Rigg Farm, because it is there done not under so much what I call sufferance, as it is under the control of the farm governors; and it is also an interesting matter to the pupils who go there to see these experiments carried out, and to have the results of them demonstrated clearly to them.

7119. You consider that the work done by the school may justly be described as pioneer work?—Yes, so far as the students go it is. Of course, with regard to the teaching of the young men and young women, and to all sorts of lectures that are given by our manager there and his staff, I think they appeal very much to the farmers and to the practical farmers, and I would say to the best of the farmers too, and the prejudice that existed at first, when the school was established and the lectures were given, has very much died down, and the advantages I believe have been very very great indeed to the farmers of Cumberland. I know from experience and from information, and I would say that the most successful farmers have taken advantage of the results of these experiments, and have applied them to their own practical farming, and I believe the results

have been very beneficial both from the agricultural point of view generally and to the farmers themselves; so much so that I would say with regard to the results of the experiments that no farmer now need make a mistake with regard to the purchase and to the use of his manures for the different crops that they are required for; neither need he be imposed upon by dealers and merchants when buying these articles. The benefit to agriculture in that sense, I am sure, has been very great indeed.

7120. Is there any co-operative association in Cumberland among the farmers?—There is not so much. We only have one farming co-operative society that I know of at present. There was one, I believe, in the eastern part of the county, and there is one now which in the earlier years of its existence I think was a great deal of benefit to the county because it was controlled and managed by men of experience or an expert who took upon himself to know the price and the value of manures and seeds and feeding stuffs and also laid down a basis upon which the farmers were able to purchase their manures much cheaper than they had done before, and also to take action in case of any grievance or any article of manure or feeding stuffs not being up to their value. It has had a most extraordinary effect upon what I will call the commercial aspect of farming in Cumberland. I believe it was the means of making merchants and dealers more careful and of the farmers being able to purchase manures at a reasonable price, but I do not think that it is spreading in its influence as much now as it was at the time it was formed. Still, it is a very popular and deserving society by which a great deal of good has been done.

7121. You yourself would be in favour of extending the number of co-operative associations amongst farmers?—I would rather be wary in saying that I should be much in favour of it. Like all other co-operative bodies it gets into the hands of what I would consider managers and people who want to be well paid for the work they do, and I would rather that a really good knowledge of commercial life and business was circulated and that the farmers should become their own purchasers, because I am sure now if they are taken in by the purchase of any manures or feeding stuffs it is their own fault; they do it with their eyes open because the education with regard to the value of the ingredients of manures and feeding stuffs has been made so well known throughout the county by our own experiments and by those of the Armstrong College. The education that has been spread among the farmers has been so beneficial that we are now, I think, dealing with a different class of men from what we had 50 years ago, and that they are now beginning to be able to conduct that business for themselves. I think agricultural societies should take up more the educational part in connection with their exhibitions, and if Chambers of Agriculture were to have papers or essays read upon modern farming compared with farming 50 or 100 years ago, and bring up the requirements of both landlords and land agents and others as well as farmers to the present-day times, it would do a great deal more good in my opinion and be very beneficial and for the good of the country and for agricultural purposes generally.

7122. Are there any butter factories or creameries in Cumberland?—There have been, I think, one or two, but not in Cumberland so much. There is one in Westmorland, and we have still a very large one in Cumberland, but one or two have not been successful.

7123. Why have they not been successful?—I think

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very much on the ground that for creameries to make cream into butter was not really a profitable investment. The distribution of milk itself and cream has been more successful, and the one creamery that I had in mind failed because it was not in a district where it could distribute its milk as it is done by the Cumberland Dairy Company, for instance. There is now a system in the market towns of Cumberland, at Penrith and some others, whereby farmers take in their butter in the bulk and the dealers grade it up together. That has reduced the loss to the farmers, I believe, considerably because we have not all learnt yet to be good butter makers, and this undoubtedly helps to send the butter away in a very much better condition, and the consequence is that they themselves have rather disestablished the creameries. But in connection with the other large creamery at Low Row, the profitable part is in the distribution of cream and milk; the making of butter is not so profitable a thing—a certain quantity of it is, but not to depend upon it so much as the distribution of the milk and cream. It is growing to be a very large business the distribution of milk and cream, and I think much more profitable than butter-making, but still the making of butter is successful now in connection with it.

7124. If butter-making could be done in that district, then you would be in favour of the establishment of butter factories?—Certainly. We have some large co-operative societies and others have held meetings in the villages with a view to establishing such-like creameries or butter factories, but as yet they have not come to maturity. Nothing has really been done. Farmers attend in large numbers, expecting that some benefit was going to come to them, but when all was explained and laid down, they did not see that there was much benefit and the great tendency now is to sell your milk if possible right away from the farm wholesale, even at a lower price than to make it into butter for the creameries. It is a drawback with regard to the rearing of young stock, but there are substitutes now and instead of giving the young stock all skim milk, as they used to do formerly, they now just add a little new milk to the other ingredients and they are mixed together and this is the way now that a good many farmers rear their young stock where they sell their milk wholesale. The wholesale price of milk even is much more profitable and certain than the making of it into butter.

7125. With you the sale of milk and cream is a profitable business?—Yes, it has been the most profitable of any business as connected with farming. I remember beginning myself to sell milk well on to 30 years ago, and at that time my farming friends looked upon it with a very great suspicion and said that they thought it was on the road to ruin to sell your milk, but now they have all come to it very much and think it is the most profitable way of contending with the times. I think the milk industry in England at present has still a splendid future before it if landlords and land agents and authorities would see that everything in connection with the occupation of land were put into proper order and condition. We are now meeting, as you know, some very strict regulations, and farmers are obliged not only to have their animals healthy but to see that all the surroundings in connection with the production of milk and its distribution are in proper condition.

7126. The farmer is careful in the selection of his cows—he pays great attention to the milk-giving capacity of the animals he breeds and buys?—The real dairy farmers do so, but as a farmer of large experience my own opinion is that I do not think there is such a great advantage to be gained from a farmer being set entirely on what I might call producing the greatest quantity of milk. If you go into the entire production of milk you introduce into your herds, to some extent, animals that will milk themselves almost to death. You have nothing realised at the end of their service to you. I like in this matter, cows which are both flesh-formers and milk-givers, and which produce a good stock. That is what I have been thinking is really the cause of the success of Cumberland farmers at least. They keep a very fine herd of Shorthorn cattle as a rule—not a large one. They milk their cows for about four years, and then they are sent to Edinburgh, and they have a very good stock coming into the place. They make from £18 to £25 a head on the cows that go out after they have been served for four or six years.

7127. What is the average size of a farm in Cumberland?—I believe the average size would come down to about 50 acres. I should think so, but I would not like to speak on that. The ordinary farm is from about 150 to 200 acres.

7128. Are there any small holdings in Cumberland?—There are some very small farms from about 30 to 50 acres. You must understand that in speaking of farming in Cumberland the whole of the farmers are working farmers almost, and even the large farmers as a rule mostly manage their own farms. I almost do not know of a farmer who keeps a manager.

7129. Have you any difficulty in obtaining labour?—I never had any difficulty, though I think the country is very short of labour, that is, it is not the fault of the men. It is the fault of the farmers, who do not employ them. I think a great deal more could be got out of the land than is done if they would employ more labour. I have a sort of opinion that as to every man who is worth his wage and can work for a reasonable wage, if a farmer has need for that man, and he can help on his farm, it will always pay him to employ him. The more men he can profitably employ on a farm the better. The great want with us is not having suitable accommodation to put them in. The system in Cumberland is now changed from what it used to be, that is, boarding all the men nearly in the houses. They want to keep them outside and have cottages provided. I do not think myself there would be any strong wish for small holdings in Cumberland, but there is a very strong wish to have better accommodation upon farms.

7130. You think that is the principal want?—That is the principal want.

7131. That is, better houses for the farm labourers?—Better houses for the farm labourer. I think it is the principal want. Of course I must not complain of my people when they provide me with five cottages, but I have to engage other eight or nine as best I can, and some of them are two miles away from my holding.

7132. You think it is very important that the labourer should have his cottage near the farm?—Certainly, and it should be a comfortable cottage. Most of the cottages are very bad. People say labourers are leaving the land, but I do not think they would leave the land at all if they had a suitable house to live in and were paid a reasonable wage.

7133. Do you think it is more important to provide cottages for labourers, and that there is a greater demand for them than for small holdings?—Yes. Speaking for my own men, I do not think they would be as well off as they are at present under my service. I do not think they want small holdings at all.

7134. (By Lord Barnard.) While on the subject of milk, I think I am right in saying that the fresh milk trade is extending very considerably, is it not?—Very considerably.

7135. A great deal of it, I suppose, goes to the east coast?—Yes.

7136. I say that because I was in Newcastle Station, waiting for a train, 10 days ago, and while there I read the names on an enormous quantity of milk cans, and saw that many of them came from Cumberland and Westmorland?—Yes, that is so.

7137. That is increasing?—Yes.

7138. Do you think I should be right in saying that probably one cause why the price of butter is bad in the district is in consequence of the enormous importation of Danish butter on the north-east coast?—I do not know that. It has always been the case about the month of May or June that the butter has been at a very low price, but I think that it is more regular now than it used to be in former years. Then that butter, which is not manipulated by butter blenders, is not as a rule so good, notwithstanding that it is very much improved. But you will find that some of the local butter-makers, the farmers I mean, are not able to compete with what I would call fine quality and things of that kind, and especially in the change from summer to winter feeding. That is the most critical time in connection with the making of butter. It is very seldom that you can get butter to keep more than two or three days that is made in the old conditions in a time of the year like that. In consequence of that they must take a bad price for it now, because the public taste has got up to such a point that they will not have it if they can help it in any way.

7139. You are well aware, of course, that the manufacture of butter in Denmark is largely carried on on scientific lines and is assisted by public instruction?—Yes.

7140. Then would you agree that there is scope for similar instruction now in England?—There is no doubt there is, very much so. It appears to me that the Danes have been able to make their butter so steadily that there never seems to be a mistake with them.

Mr. R.
Tinniswood.
11 June, 1907

Mr. R.
Tinniswood.
11 June, 1907

7141. Do you go to Offerton Farm at all?—No, I have not been to it, but I have been to Cockle Park.

7142. I will not trouble about that?—I have been to the Lancashire Dairy Farm.

7143. You have a very good class of stock, I know, in Cumberland and Westmorland?—We think so.

7144. Shorthorn stock?—Yes.

7145. And you consider that your farmers understand the breeding of stock pretty well?—I believe they do.

7146. I know they do as a matter of fact, but at the same time that is no reason why they should not try to go still one better?—No, by no means.

7147. There is always scope for more information?—Yes.

7148. I know you yourself are famed for the excellence of your farm. How many acres do you farm?—I have about 1,500 acres at present. The farm I live on, as to which I rather pride myself in keeping it in order, is Rosebank, the other is Inglewood Edge Farm, and is all grass. Then I have four gentlemen's parks of about 500 acres or more.

7149. But you are yourself a great believer in applying science to practice?—Yes.

7150. And improving your knowledge generally?—Yes.

7151. I know as a fact you have done it yourself with great success.—If I had had an opportunity when I was a young man I think I should have succeeded better than I have done. You must have knowledge first, I mean, to be able to apply improvements to your practice in farming. I had to learn a good deal of my knowledge in everything when I was a ploughboy.

7152. What I should like to ask you now is, are your neighbours and fellow farmers beginning to have the same opinion of this that you hold? Have you converted them to your views?—I think they were as good as I am, many of them, in point of management to the best of their knowledge but they did not adapt themselves to new methods, and I cannot see that any farmer farms to much good unless he makes a profit.

7153. Do the farmers in Cumberland begin to appreciate the value of improved scientific knowledge?—Yes, certainly they do.

7154. Then in fact your County Council ought not to stand still?—No, by no means.

7155. They ought to go on trying to give you increased knowledge, and you think that to do that, from your knowledge obtained as Chairman of the Farm Committee and as a member of the County Council, you ought to have more funds?—Yes, we ought to have more funds.

7156. In what way do you propose to extend the operations of the Farm School if you had more funds? Are you prepared to do anything in that way?—We could do more good to our own county if we had a larger school even. I admit, however, that I think we could do more still by having to some extent experiments more up to date. I am sure our manager is a very hard-worked man in his position, and if we could have some assistance for work in the same direction that Mr. Lawrence carries on I believe that we could do much more good. I would be much more inclined to make the farm still more experimental. You have to have gentlemen who are correct in their figures and everything in dealing with experiments. You must have that, and while it may be carried out on farms it cannot be carried out so exactly as it is under what I would call the manager's direct supervision.

7157. You want an increased staff, in fact?—Yes.

7158. Your staff is not sufficient?—No. I would be very much inclined to recommend what was asked Mr. Howard with regard to something being done for the sake of giving to elementary school teachers some knowledge of farming and gardening and horticulture in connection with their schools. I think that having school gardens would be very desirable for the purpose of inducing the young elementary boys to begin to have a knowledge of this work. A great want, I think, in connection with youths is that they do not seem to value the education, or at least they do not think what they are going to do, and in consequence they do not apply themselves as they ought to do. They want to take an interest, I think, in this, and I think a certain number would take an interest in it if there were school gardens attached to the elementary schools.

7159. Do you know any boys or their fathers who have

been through the Farm School? Do you know them personally?—Yes; and I have the pleasure of hearing from more than one that their son has got more good from being six months at Newton Rigg School than for two years at the elementary school in regard to applying the knowledge they have learned to what they were going to be and their calling and practice afterwards.

7160. I do not know whether it is your opinion that a boy ought to work on a farm before going to one of these schools?—Yes, I think that would be a very great help to him. I think it would not be wise to go before working on a farm for at least a couple of years.

7161. I suppose most of the farmers' sons in Cumberland and the sons of these small men only go to an elementary school, or do they go to secondary schools?—They only go to an elementary school; they begin to work very early, as to some, I think.

7162. I am sorry you have given up your additional experimental plots, but when you did so I am surprised you did not take up some other work of some kind in the county. However, you agree with what Mr. Howard said on the subject, do you?—Yes, I do generally with regard to that. As I said, I would rather concentrate more of our work on the farm and send an increased number of pupils there if we could do it.

7163. But you have dropped the one and not taken up the other, unfortunately?—I think Mr. Howard feels like us all. He is responsible for a good part of the educational work of the county, and we all, as being those who have to do with education, have been blamed for spending a great deal of money unnecessarily. I think it is most desirable that the secondary schools, or at least the higher elementary education, should be extended in the county, so that those who are brought up in connection with their homes and families should not go into a town or to large centres for schooling. I think what they gain they lose by losing their attachment to and interest in home life and farm work. If they could have a little higher elementary education in connection with agriculture, and have that brought home to them or brought near to their homes, that would be a great help to them in regard to their staying at home and becoming attached to the country.

7164. It would improve their intelligence, in fact?—Yes.

7165. (By Mr. Latham.) You spoke of your farm governors. What are they?—The farm governors are members, I think, all elected by the County Council. They are upon that body and generally they are elected because they have some connection with agriculture, or at least are willing to attend the meetings. The meeting is held at the Farm School. Some gentlemen might wish to attend, but find it very inconvenient, and consequently you elect gentlemen who are interested in farming and who are perhaps not living more than 20 or 30 miles away.

7166. Are they simply visitors, or have they anything to do with the management?—The governors have all to do with the management. They are the managers.

7167. They are responsible for both the working and the finance?—Yes.

7168. You were speaking just now of co-operative societies. To what extent are there co-operative societies in your district?—The only one I know of at present is the one I spoke of. There was one at Brampton, in the east, and one at Aspatria, in the west of Cumberland. I am a member of this one, and it does a very considerable business, at any rate in the way of buying manures and feeding stuffs and seeds, and other requirements such as sheep dips, &c. They buy them from the best sources, and also have a guarantee that there will be no mistake with regard to their purity. It has done a very great deal of good, formerly at least.

7169. What is the society composed of?—I think they are all farmers. It is a very large society. I know it is managed by a farmer as the Chairman. The secretary or treasurer is a veterinary surgeon, a very able man, and a great enthusiast in agricultural matters.

7170. I suppose these men who are members are shareholders?—They are all shareholders. They have to be shareholders, I think. I do not think you could buy these manures and stuffs unless you were a shareholder or unless you paid a higher price. I think it is in shares of £1, or it may be 5s. each; I do not know which. But I know that I hold a few shares in it. I believe they are £1 shares.

7171. It is carried on with great enthusiasm, is it?—It is, and I believe with very great care, and upon good business principles. I think they have undoubtedly

reduced the price of manures and also the cost of feeding stuffs, but in manures, especially when it was established.

7172. I understood you to say just now that you thought the farmers of the day were different men from what they used to be, through this farm education. Is that what you said?—I mean that they have as a rule a better education, and they can, I think, apply the improvements and the results of those experiments that have been carried out much better than was done formerly. The old farmers are very much prejudiced against being instructed by anyone who was not considered a practical farmer. The consequence was that the farmers formerly, I think, generally took their way of farming from custom and from observation; but now I think the farmers go upon more independent lines, and they know a great deal more about their business than they used to do.

7173. This Committee may take it that you consider the land of Cumberland is so much better farmed as the result of the scientific knowledge that the present race are getting. may it?—Yes, I think so. I think it is very much better farmed as to the major part of it.

7174. Now with regard to your butter-making not being a profitable occupation, is it good butter which is not profitable, or is it that the butter is made so badly that you cannot sell it?—I think it is always unfortunate for even the good butter-makers if they are in company with those who make bad butter. Very often if they go to market and they have both good and bad butter there is no doubt that, seeing there is no grading, as you might call it, and that it is not graded, you have to sell perhaps your better butter at a lower price than you would do if it had been all good butter.

7175. If all the butter of England at the present time was high class butter, and of high quality. do you not think there would be a good trade for it?—Yes, I think there would.

7176. We import an enormous quantity of butter at the present day, which is worse than our own in my opinion. I consider our English butter is very much preferable, and do not you think that since you have had the dairy schools and better dairy teaching your butter has improved in quality, and that the trade is very much better?—Yes.

7177. And that our own butter is better?—Yes.

7178. I am speaking of the English butter?—It is very much improved, but seeing that there is nothing in the way of what you might call inspection, and no grading of butter, and that there are no regulations applied to the making of butter, such as there are in Denmark, of course it is all left to the individual farmer and his wife, and it is not everyone that complies with the best way of making butter yet. I think that has a great tendency to keep the price of butter low, as well as the character of it.

7179. That answers my question to some extent. If this butter could all be made on new scientific principles, you consider there would be a fair trade for it?—Yes.

7180. Your County Council, in common with all the County Councils of England, is in putting the improvement of the butter industry in the very first rank, is it not?—Yes.

7181. It was virtually a lost industry, but there has been a marked improvement in the butter trade?—Yes, perhaps there has not been the improvement you would expect in the butter trade, but there is an improvement undoubtedly in it, though not to the extent you would like to see.

7182. You were speaking just now of good milk. Is not there almost as much bad milk as there is bad butter?—I do not understand what you mean when you say that.

7183. We know as well as possible there has been a very great complaint, and I think great feeling against the milk standard. Most people think that the milk standard has been too high?—I do not think that it is too high at 3 per cent. of butter fat.

7184. Nor do I, but some people do?—But I do think that the better way would be, as is done now I think by some corporations and others, to issue leaflets, or anything you can, to instruct farmers as to the best way of keeping up the quality of the milk.

7185. That leads me to the next question now, that there is as much education required in the keeping up of good milk as there is in regard to good butter?—Yes.

7186. And that might be done at very much the sort of place you are advocating at the present time?—Yes; it is very important that it should be kept up. When it

gets below that it is bad, but I am glad to say that at the present time the Board of Agriculture have recognised the fact that farmers were formerly liable to be proceeded against, and I am sure many innocent farmers in former times have suffered innocently. The milk was pure but of poor quality. I think the Board of Agriculture have done a very great service in seeing that the test was even applied to the cow, so that the man might not be punished when he was quite innocent and had no intention of supplying poor milk; and on the other hand I think everything ought to be done to bring up the quality of the milk to the standard.

7187. I think you told Lord Barnard a few moments ago that you considered that this scientific or better education of the farmer tended to a much larger yield from the land. Was that so? Did you say that a man who was thoroughly well educated in his business could produce a greater return from the land?—Yes, I do say so.

7188. That is one of the most important questions we have ever had answered in this room, I consider?—I think that that is so. I think you cannot educate the farmer too much, and seeing that his means are so small, speaking merely of Cumberland and of working farmers, you cannot educate them too much. He must have knowledge in the first place to apply to his business, and he will do his business a great deal better if you do not spoil him with what I will call too much of town life, or ideas about going to where there is more to be seen and spent than is to be either done or made.

7189. Still on this particular question, seeing that I am a farmer myself I suppose you mean that the means of producing this greater yield are not too large, but you would not encourage a man to go to too great an outlay in producing this extra yield. It must all be done for a profit?—Yes, certainly.

7190. I suppose you will agree with me there is a vast deal of money thrown away often through ignorance in applying wrong manures to the right place and right manures to the wrong place?—Yes.

7191. That sort of education is likely to be very much better if such education could be procured from farms, and it is better if it is obtained from educational bodies similar to those that you represent?—Yes. There is nothing better for farmers than to distribute information bearing upon what I would consider practical successful farming. Speaking from what I have felt in connection with the history of the Royal Agricultural Society, the former practice of giving prizes to farmers was in my opinion one of the best kinds of work they did in the country, because of the information it spread amongst the farmers. I may say I have heard myself that it was of more value to read the reports on those farms than all the rest that was published in the Society's *Journal*, and I hold to that principle yet. Speaking for myself, in connection with my own farm, I have an experimental plot, and Professor Gilchrist came over and gave a lecture on the result of it on my farm, which was very largely attended—by about 100 farmers, I think, and gentlemen. The interest in that was very great. Last week, or the week before, I had a visit from the Essex Dairy Farmers, and the interchange of thought and ideas about farming and farm management I believe to have been very beneficial, and that visit has been very much commented on with regard to its usefulness to agriculture for both counties.

7192. Now with regard to the small holdings that you have given us some very good evidence on, do you think that there is any anxiety in your county amongst the small men to get land?—I do not think there is. You see, there is a considerable number of small farms already, and there is no difficulty with regard to that for a man who has got any means I think. But there seem to be more people who can take a 50-acre or an 80-acre farm than any other farm in Cumberland. These small farmers come very much from the farm labourers. We pay them fairly good wages, and many of them become small farmers. I was told just on Saturday by a neighbouring farmer of a case of a farm servant which shows that these men can manage to get a small farm. He said his boy farm servant came to him seven years ago. He engaged him and gave him his board and £14 a year for the first year. That went on for seven years, and in the seventh year he had £34 a year with his board. He asked him this very Whitsuntide what amount of money he had saved, and he said he had now £200 in the bank, and that was due to the example of his master and the interest he took in him. He told him when he paid him his first half-year's wage, "After you have got your clothes, if you put the rest in the bank it will be a good thing for you"; and that was the result. He told me that just the other day.

Mr. R.
Tinniswood
11 June, 1907

Mr. R.
Tinniswood.
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11 June, 1907
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7193. And he is not a small holder?—When he marries and gets a wife like himself, he can now become, no doubt a very successful farmer.

7194. But he did not get that as a small farmer?—No.

7195. You stated just now that you thought the majority of the farmers get their education from the elementary schools?—Yes, they do.

7196. If they move from them, where do they move to?—After they are moved from the elementary schools do you mean?

7197. Yes.—Of course what Newton Rigg supplies is very small, but the majority of the farmers do send their sons to secondary schools in Carlisle and the other towns in the county. But I am speaking now of the really hard working small farmer with a large family. He very seldom sends his boys to any other school than the elementary school.

7198. Then with regard to the secondary schools, you made the remark, I think, that they could get more information from your school than they could get from the secondary schools?—I have said that was what I had been told by a farmer or two.

7199. Would it not be knowledge of a very different character?—I think the knowledge is supplied in a different way, and the same with regard to observation. Then I may say that they see the benefit of discipline and method in applying their knowledge to the work they were doing. There is not so much method, perhaps, about the farm as there might be, but I think they were very much improved by seeing that things had to be done punctually and methodically, and then of course having the benefit of lectures by the manager upon animals, and the application of manures to soils, and with regard to their handling of the cows and the sheep upon the farm, I think it was demonstrated to them very much better than it could have been done to them in any secondary school. No doubt the education they had got before they came there was a very great help to them in enabling them to profit by this sort of work.

7200. You think that the two teachings are separate necessarily?—Yes, in a sense they are. But how you could link on the agricultural education to the secondary schools, it would be difficult to say.

7201. You would not advocate an agricultural side to these secondary schools, would you?—No; I would only in a very elementary fashion do so. I think that a knowledge of agricultural chemistry and also of practical engineering is very desirable in connection with farm labourers and men at present.

7202. At what age do you expect to get these young men to come to your school?—I should think they very seldom come under 16—I should think from 16 to 28. There are some of them, not many, I think, of 16 to 18 years of age.

7203. How long do you generally keep them—how long is your course?—Only six months.

7204. Provided you get a young man who wishes to have a longer course, can he have it. I mean if he takes an interest in what he is doing and wishes to stay a longer time, would you keep him?—I do not think we should unless he was prepared to pay an extra fee, and take the course the following year.

7205. Of course six months is very little time to get much science in, is it not?—It is not long, but I suppose

it is perhaps long enough for an ordinary farmer. He ought to get, what I think for an ordinary farm, is enough. If he is going to be a land agent, it is different perhaps.

7206. You consider that the ordinary farmer, if he is going to make a living by his business, will get as much as will do him any good in the six months' training?—I think if he is to be a successful farmer he ought to get it in six months.

7207. (By Professor Middleton.) Just to continue that question; you would agree that it would be only possible to give him what he required in six months if he already knew something about farming and had been on a farm?—Yes, that is so.

7208. You could not take a schoolboy therefore from school, and in six months give him the sort of knowledge that a farmer wants to have?—He could get what I should consider just the elementary part of it. His business would give him the rest of the education.

7209. But if he had had no previous knowledge of the business, and had seen nothing of a farm, you do not think that he could possibly learn much that would be of great use to him in farming in six months' time?—No, indeed I should not think so. He would learn, it might be, a great deal. It depends very much on the kind of man. All our Newton Rigg pupils have had practical experience on a farm before coming.

7210. Have you had experimental plots at your farm for a number of years?—Yes.

7211. You just now alluded to the fact that you had some neighbouring farmers to see them?—Yes.

7212. Have your neighbours been taking an interest generally in this experimental work?—Only through the publication of our reports, and on the occasion when Professor Gilchrist came and gave a lecture of course that brought them there. But they do not come to see the plots excepting occasionally.

7213. There is nobody to show them round, I suppose?—No; and there is no time fixed for that. But I have farmer friends coming to see me, and I naturally take them round; but they read the reports, and of course they get their information from them.

7214. What is it in the experiments that has been most interesting to these men. Do you remember what subject it was that was most interesting them?—I think what has interested them most in regard to the plots, has been the application of manures to the different crops. They had been able to see how they could grow the best swedes especially. I think they take perhaps most interest in the result of growing swedes and the manures that are applied to them; and then of course that has been followed up by the crops that come after them. But Mr. Lawrence perhaps could speak more correctly as to the results of these plots. I believe that the greatest interest has been taken in the application of the manures to the swede crops.

7215. There are two sorts of manuring. There is direct manuring, and also sheep feeding on your land?—Yes.

7216. Are Cumberland farmers more interested in sheep feeding or manures?—A great deal more in the manures because they would take their own way in feeding sheep and pasturing them. That was interesting to a certain number, but the manure was the principal thing.

Mr. W. T. LAWRENCE, called and examined.

Mr. W. T.
Lawrence.

7217. You are the manager of the Newton Rigg Farm School?—Yes.

7218. Would you give the Committee an account of what work is done at the school during the summer and during the winter?—Our dairy has accommodation for eight pupils to work separately—that is, there are eight churrs and the other appliances that go with the churns. So that we have eight pupils during the spring for two months, and then again during the summer, and then again during the autumn. We have three courses in the year for girls. Eight pupils attend and go through their dairy course, which comprises the ordinary work that is carried on in Cumberland and a little beyond that, with a view to encouraging them to extend their dairy work

in lines a little more profitable than merely butter making, such as cream cheese making, and clotted cream making, and cheddar cheese making, with a view to encouraging them during this time of the year, for instance, when there is a glut of milk, to direct the milk into a more profitable channel than merely making it into butter. Then there is poultry, and the rearing of poultry, and milk testing, and we even go to the extent of teaching them something about the feeding of dairy cows in winter time as well as summer. Of course they practice milking and calf rearing, and, speaking generally, we may say that one tries to teach them that which a woman engages in in north country farming, because in the small farms of Cumberland the woman is a very important factor in the

Mr. W. T.
Lawrence.

11 June, 1907

work of the farm. She practically undertakes the whole of the dairy work and the whole of the calf rearing, and the rearing of very young stock up to six months old at any rate. Frequently, of course, she does other work besides, and she does the whole of the poultry work and marketing, and so forth. We just try to equip them for the work they would have to do so that it may not be done in a sort of slipshod, anyhow sort of way. We try to let them see the way of doing the work and the necessity for doing it in such a way that it will realise the best market price. That is really our work with the girls.

7219. What age are they?—We do not take girls below 15. Fifteen is the minimum limit for girls, but then we take them up to any age beyond that.

7220. What is the average age?—I should think the average age is about 17, or from 17 to 18.

7221. Are they the daughters of farmers?—Yes, and of farm labourers, and the better class of cowmen. They frequently send their daughters, and they are very suitable girls for making good dairy maids. They have been used to hard work generally, for that is the work that they have to do. Among the small farmers in Westmorland and Cumberland many of them are blest with very large families, as many as 12 or 13, and, of course, they cannot all find occupation at home, and they are glad to go out as dairy maids. We try to equip them for their work, and we have got our dairy maids scattered all over England and some parts of Scotland, and it is rather pleasant to feel that where we have sent one girl we almost always have applications for others when she gets married or leaves.

7222. You say the daughter of a small farmer becomes a dairy maid?—Yes, often.

7223. Are the girls taught any cooking?—No.

7224. Nothing but their farm work?—No; nothing but their farm work.

7225. And all practical work?—All practical work. They have oral lessons in the principals of dairy work every afternoon except on the cheese making days—that is, on butter-making days, the morning being sufficient for the making of butter.

7226. But no chemistry?—No.

7227. No science?—No; but I should not say no science, really, because these afternoon lessons are really in dairy science.

7228. But all bearing directly upon their work?—Yes.

7229. You say that you have three courses for girls, each of eight weeks?—Yes.

7230. One course is sufficient?—In the case of a girl of 15 or just over 15, if we think that she is hardly showing up at the end of her course as well as we might have expected, I frequently write a private letter to the parents, and say, "I would advise you to apply to the Governors for another course for your daughter, because she would benefit by it."

7231. And she gets another course?—Yes.

7232. Are these pupils all resident?—Yes.

7233. You have no outsiders, have you?—Yes, we have occasionally day pupils. For instance, we have numbers of young women coming just for cheese making. A young woman will come twice a week for cheddar cheese making, or for butter making. If they live close at hand and can cycle over they can come as day pupils and have a course in butter or cheese making, and so on.

7234. Do they get the same course as the resident students?—Not quite. They come for a special purpose and the course is useful for giving them what they want.

7235. They are intermittent?—Yes.

7236. They do not attend regularly?—They attend their lessons regularly, those particular lessons, that is, but they do not take the whole curriculum of the class.

7237. Whereas the resident students take the whole course?—Yes.

7238. And for the resident students the course is eight weeks?—Yes.

7239. Would you like to increase the number that you could take, and would it be more for the benefit of the counties, both Cumberland and Westmorland?—It is not often we have to refuse pupils on account of lack of accommodation, but I believe it is getting a little more that way now. For instance, in the last two years we have never had a vacant place, and occasionally we have had to say we have not room, but that does not very often happen, and

if one judged by that one would say the accommodation is nearly what is demanded at the present time.

7240. The demand might increase, of course?—Yes, that might be so, and of course that shuts us out from taking outsiders from other counties. We were able occasionally to take one or two from other counties, but that is practically not so now.

7241. It is limited to the two counties of Westmorland and Cumberland?—Yes.

7242. Have you anything to add about the girls?—I do not think so.

7243. Do you give them a certificate at the end of the course?—If they merit it. That is left entirely to the examiner. The examiner is the Professor of Agriculture at the Armstrong College.

7244. He comes down regularly to examine, does he?—Not the girls always, but occasionally. Sometimes he comes for them, but with the boys he always comes.

7245. For the girls there is no regular examination, is there?—Yes, it is regular. But there is a paper examination at the end of each course, and one of the governors superintends the examination. The examiner awards the marks, and whatever he fixes as his standard mark, then all above that he would recommend for having merit certificates, and those who fall below that do not get the merit certificate. It is not a certificate merely of attendance.

7246. It is a merit certificate?—Yes. Their teachers' daily register is sent up to enable him to judge of the practical work. I may say that after the first fortnight, which one may call the initiatory period, when they are feeling their way, the dairy teacher gives marks for the pupils, lesson by lesson, for the work that they have done, just the same as if it were a practical examination; and that register is sent up with the marks for each pupil, and so the examiner is able at the end to combine the practical marks that they obtain in the school and the marks obtained in the written examination that he puts, and he takes the whole work as much as possible in that way.

7247. That is at the end of the eight weeks' course?—Yes.

7248. Is there a staff of instructors for this dairy teaching?—Practically with the girls it is just a dairy teacher.

7249. One dairy teacher?—Yes. I give each class of girls about half a dozen lessons myself. That is all. That is teaching bearing upon the feeding of cattle, and the work generally in connection with the cows and calf feeding. But I may say that every day, twice a day, the pupils have to attend to the cows, and rearing and feeding the calves, and so forth. That is a department of work that never enters into the hands of any of the farm hands at all. The whole of our calves are reared entirely by myself and the pupils, because we think it is an important thing, and the foundation of our stock. We think that those who are engaged in that work should be the ones that should do the work when they are taken in.

7250. It is all done under the direction of the dairy teacher, is it?—No; the calf rearing lessons I give them, and the lessons on the feeding of stock. With the exception of that, all the other work falls to the day teacher.

7251. But who gives the teaching in the feeding of the calves?—I give that.

7252. Then the work is distributed between you and the dairy teacher?—Yes, a very small part of it falls to me.

7253. The main part of it falls on the teacher?—Yes.

7254. Now we can go to the boys?—As to the lads the limit of age for them is 16. We take no lad under 16, and we do not care to have a boy straight from school. We have occasionally had them straight from school, but we do not care about it. We like a boy to have had, if possible, two years on a farm. It is quite true he has forgotten some arithmetic and has become more clumsy in his composition, but he soon picks that up again. But that disadvantage is far outweighed by the keenness that he shows with regard to the work we are doing, and in regard to the actual farming, and our course is so arranged that we try to give science lessons as thoroughly as possible, but at the same time we do not wander one single inch one way or the other out of the line of direct application to the actual farm work. For instance, in chemistry lessons we should not think of teaching anything but concerning the elements that enter into agriculture, and only the compounds of those elements that directly bear upon soils and manures, and so forth, on the farm, and in that way

7254a

7254b

Mr. W. T.
Lawrence.
11 June, 1907

we are able to narrow it down and make the best of the time. In botany, for instance—if one may give it so good a name as that—they have a course of lessons on how plants live and grow, and then they take the characteristics of the different crops and they just learn the natural orders to which the crops belong, and the weeds probably belonging to the same class. I mean to say that although the foundation of their knowledge of plant life and the growth of crops is based upon sound botanical principles and knowledge, yet we do not go a bit beyond what is directly applicable to the farm itself. I do not know whether you are interested in the course they follow, but it practically comes to this: that for the first month we are doing nothing but chemistry and mensuration. That is our day. Our day is cut up something in this way: the boys are up at half past five in the morning, and the girls the same in

7254c fact. The first work is the milking. The boys engage in the milking. We have more boys than girls—we have 10 boys. We are limited as to the girls by the accommodation of our dairy, and in regard to our boys we are limited by our bedroom accommodation. We could accommodate 10 boys in the bedrooms. Five of the boys would be milking, and five of them would be helping the cowman foddering the cattle. Those at the milking would attend to the separating, and also would attend to the feeding of the calves. Then that takes the work up to breakfast time. After breakfast, from 9 till 12, it is class-room work entirely. There it is that they get the chemistry lessons, or whatever the lesson may be, in farm science for two hours. Then the third hour is given to figures. That is they take up farm mensuration, and, alluding to a remark I heard just now made by Mr. Tinniswood, they told him that the boy had learnt more in the six months at Newton Rigg School than he learnt elsewhere in a much longer time. That meant that the boy showed more improvement in composition and in expressing himself, and in accuracy of figures, and in the application of figures. He did that better, and no doubt that may be the case, because the boy is keen to see the bearing of the thing. It is astonishing how in the six months they do rub up in their ordinary elementary education, and improve in their writing and spelling and composition and figuring. I think they improve immensely. They get a good deal of practice, of course. But that is not the object of the place. It is to give them scientific knowledge such as will help them in farming. That is, roughly speaking, one may say, what we try to give them, and it is what they cannot learn at home. We do not pretend to teach them ploughing, or to teach them what they can learn better at home, and we do not wish to make them break their connection with the farm. Therefore we take them in in the winter time, and they can employ on the farm at home the science that will help them. We endeavour to give to those who would never get it in any other way farm science—we simply get the boy and give him such knowledge as that.

7255. Your object is to prepare him for the farm?—The boy has to go back again to the farm and make use of the education that he has got with us. Then every afternoon they are out on the fields. There are class room lessons in the morning and field lessons in the afternoon. The majority of the boys go back and work on the farms.

7256. What is the staff of teachers for the boys besides yourself?—There is no one else, except twice a week when making butter, and then the dairy teacher looks after them.

7257. Are the boys doing dairying too?—Yes, they do it twice a week. They do it in winter.

7258. Do they get that training from the dairy teacher?—Yes.

7259. From the woman?—Yes.

7260. I see you have given in your proof their curriculum in detail?—Yes.

7261. Therefore I shall not ask you to go into that. Then the Professor of Agriculture from Armstrong College also holds an examination for the boys?—Yes, and he visits. He not only holds the written examination at the end of the course, but he comes before the end of the course and gives them a *vis à voce* examination, and takes them one at a time through the stock, and so on.

7262. He always attends?—Yes, that has been the practice.

7263. And also sets the papers?—Yes.

7264. What is your explanation with regard to the way in which the boys come to you, as to their having been

turned out before?—We may get a boy who has done chemistry in a secondary school, going from an elementary school to the secondary school, and if he has done some chemistry, not necessarily having specialised for agricultural work, but general inorganic chemistry, it is a very great help to him, and I might say that that is the direction in which, I think, education could be of benefit to agriculture in the secondary schools—not teaching the principles of agriculture so much, but teaching mensuration and occasionally the sound practical basis of chemistry and elementary botany. That is elementary science pure and simple without any direct application of it to agriculture. That would very much enable him to understand what we are doing when he comes to Newton Rigg. The majority of the boys come straight from the elementary schools—they have passed standard vii. and that is quite enough for our purpose so far as actual elementary attainments are concerned.

7265. Have you a school garden?—Yes.

7266. I see you pay a good deal of attention to book-keeping?—Yes. That has turned out to be of use to many too. Several of our pupils have been farm servants, young men of 25, or from that to 30, and they have come up for the six months in winter. In Cumberland that means from the 11th November—that is hiring time. On several occasions such young fellows have come up for the winter course to Newton Rigg, and I have now in my mind four who are managers of home farms—one in Northamptonshire, one in Somersetshire, another one in Ireland, and another one in Staffordshire or Cheshire. They are managing farms and doing it very successfully, and they could not have taken those places if they had not had some lessons in book-keeping, because they have to keep the books and keep them properly.

7267. Do the sons of farm labourers also come to your schools?—No, not often.

7268. They are mostly the sons of farmers, are they?—Yes; the sons of farm labourers would be those few young fellows who have grown up, and perhaps they see the value of it themselves and have come on their own initiative. They have not been sent by their fathers, I mean. We occasionally get them in that way, and very many of the farmers in Cumberland send out their sons as farm servants. For instance, when a boy attains the age of 16 he goes to the ploughing on his father's farm, and works till he is worth a pretty fair wage, and then another son has come up to take his place, and he is hired. He goes and hires himself as a farm servant. Now that boy is the best class of boy and has more of the farmer style about him; he has gathered more from his parents in their own farm than might be the case otherwise. That is the sort of boy who at the age of 22 or 25 thinks "I will go to Newton Rigg and pick up what I can there—it may be of use to me," and probably he does find it of use to him.

7269. That is the boy who comes on his own initiative to you?—Yes.

7270. I suppose you are of the opinion that it would be desirable to have an institution like yours in every county?—Or in every two counties. It just depends. Of course our two counties of Westmorland and Cumberland are sparsely populated. You might take together Herefordshire and Monmouthshire, or Hereford and Brecon, or Hereford and Worcester, or Shropshire, or any two counties at a time. It would be ample with one.

7271. There are many counties which would be locally benefited by such schools as this?—Yes. It seems to me the only way of actually benefiting the working farmer is to give him the benefit of information that may be useful to him, and to do that in the way that we are doing it. We have pupils now and then who have come in with the intention of going on further, to an agricultural college, to the Armstrong College, or some other one, with a view of completing their education and preparing for their examination as land agents or surveyors, and who will probably go into a land agent's office or that sort of thing. We cannot exclude them, and they pay their full fees as a rule. They do not come merely on the £4 charged the ordinary Cumberland boy for the time he is there. They will probably pay their 10s. a week.

7272. Those boys come with the object of becoming land agents as a rule?—Yes. We do not get more, perhaps, than one in a term of that kind—that is, one out of ten may be coming with that intention.

7273. And I suppose as a rule he is better educated?—Yes, he is almost sure to have come from a grammar school. Of course as a rule he knows less of the practical

work of the farm at the same time, but he probably picks it up more quickly than he would in an ordinary way from association with the other boys.

7274. Your boys as a rule are, I suppose, hard-working boys?—Yes.

7275. We know in Cumberland they are diligent?—Yes, generally speaking they are diligent. We look after them. We do not give them much opportunity for being idle. They actually live on the premises, and that is the whole secret of success—that I have got the whole control of them there during preparation time in the evening. I have a great deal of correspondence with the farmers in the two counties—perhaps a larger correspondence than most people would imagine falls to my lot, and I can very well engage in that and sit with the boys while they are at preparation work. That is the secret of the whole thing. They get an hour and a half's preparation every evening, and the boys have the master with them that they had in the course of the day for their lessons. We drive them hard, but they increase in weight during the time they are there, and in growth, so that it does not seem to hurt them, and I have no doubt they put in more time than they would in the ordinary way in an agricultural college; I do not see how it could be done there very well, and for that reason the most is made of their time.

7276. I suppose you regret that those field experiments were given up?—I cannot say that I do very much, for the reason that the whole superintendence devolved on me, and the majority of the farmers on whose land they occurred were getting rather tired of them. The farmers were keen on them at first and while the plots showed a good deal of difference and seemed to be showing more and more to be learned from them. Then there is the change of tenants. If we have plots on a farm and it changes hands, the next tenant may not care to continue them. Then one difficulty may be the wife, who cannot see that it is putting a penny into the husband's pocket, and she gives you the length of her tongue, and that is not always pleasant. Therefore altogether I cannot say that I regret it very much. But I may say that the plots really are still giving us results that seem to be of real educational value. They are meadow-land plots on many kinds of soil. They have been carried on continuously for fourteen years and practically it has come to this now as to what can be done with those plots. The longer the experimental plots are carried on with the same treatment, such as the Rothamsted ones, the more beneficial is the teaching that they give and the lessons that you learn from them. But still at the same time for all practical purposes I think that meadow manuring as taught us by these plots would give us very little more to learn if they were carried on another 14 years than they have taught us in the past 14 years. Therefore, considering the difficulty of working them now with those obstacles in the way, and considering that they have been carried on now for so long a time, I cannot say that I feel very seriously the loss of it. But on the peaty soils we continue them because they continue to show still a great deal of unsuspected results. Those are continued: I do not think the Committee have given up those plots that are still of most educational value.

7277. But you will admit that, well conducted, they have great educational value?—Yes, I think so.

7278. It is only a question, of course, of having the means for carrying them on properly?—Yes. One thing that influenced the Committee was the fact that now they have a farm in their own hands at Newton Rigg and experiments can be carried on there. That they had not in their possession when they first commenced experiments. The experiments were devised by the Professor of Agriculture of the Durham College of Science then, Dr. Somerville, and they have been modified since by Professors Middleton and Gilchrist, who succeeded Dr. Somerville. They were devised and then modified by those gentlemen. They come, of course, from time to time to inspect them and so forth, and they are made to fit in with similar experiments originating in and carried out in Northumberland and Durham. If the same experiments were continued out, the more definite would be their teaching, and if anything is to be regretted in giving them up it is more the fact that you have taken away one of the links and have reduced, to some extent, all its operations.

7279. It is the same experiment?—Yes, exactly; because we have in Cumberland probably a greater variety of soils than in any other county in England, but because of the large number of geological formations that crop up, and because of the ups and downs of the county, a great variety is given in that way.

7280. (By Lord Barnard.) You have ten lads every year pass through the school, I understand?—Yes.

7281. Who selects those lads?—The Committee and Governors. They apply to the Secretary. He is also the Secretary to the Governors. An application form is sent to them, on which questions are asked as to the age and what he intends to be, and whether he is an applicant for an assisted studentship. Possibly he may say no, and then of course he has to pay his ten shillings a week. If he says yes, then his case is taken into consideration at the next Governors' meeting, which is once a month at Newton Rigg, and if he is the son of a tenant farmer, or a working farmer, there is no hesitation in awarding him an assisted scholarship. The grant is £4. The Governors actually select the candidates.

7282. Are there at present more candidates than vacancies?—There are rather more, but there is not much excess in that way. But we are always full now.

7283. Do you think there is any probability or any possibility of an increased number being accommodated?—I do not think so.

7284. Or requiring accommodation, perhaps I should say?—There is that possibility. But we seem very nearly to have the accommodation that is really demanded by the two counties at present. If you put the number down that we have every year, in a few years that makes a good sprinkling throughout the counties. For instance, there are 223 girls, pupils who have passed through the schools in eleven years, and 110 boys. Scattered through the two counties, that is a fair sprinkling of Newton Rigg trained pupils.

7285. You think, then, that there is no likelihood of a demand for increasing the number of lads—I am talking of boys now?—I think the tendency is in that direction. There seems to be no great rush at present.

7286. Are girls selected in the same way?—Yes.

7287. Are you always full now?—We have for the past two years been full.

7288. Previously you were not always full, were you?—We were with boys. Every winter we have been full of boys except once. So that, practically, we may say we have always been full of boys. But in the matter of girls, in the present course that began yesterday, for instance, that is our summer course, there has been some difficulty, up till two years ago, because, of course, it is the time of the year when the girls are useful at home in haywork and such-like.

7889. Then on the subject of finance. What is the cost, taking a lad first? What is he out of pocket, not counting, of course, what he is out of wages, but what does it cost him? Did I understand you to say £4?—£4 and his travelling expenses and a little for incidental expenses, such as half a crown for note books, and something like, we will say, ten shillings for his laundry work. That is all.

7890. Do you ever hear of lads going away because they find any difficulties in that way?—No, we have never heard of that.

7891. Without suggesting that they are wealthy, the agricultural classes are not badly off, in fact, are they, in Cumberland and Westmorland?—I do not think so. They are not badly off.

7892. They are not poor?—No.

7293. Then, I think, you stated that the half fee was £4?—That is so.

7294. Then does the county pay the other half?—The county has a scholarship fund, which is divided into scholarships for lads going from a secondary school to a college of university rank and scholarships from elementary schools to grammar schools; and then there is a sum of money, which must not exceed £100, from which the scholarship may be drawn for paying the fees of girls and boys coming to Newton Rigg.

7295. What you have said as to numbers of boys and vacancies and so on, as well as the fees, applies equally to the girls, does it?—The girls that have applied for a studentship have always obtained it. The £4 is the price, and the £4 for them pays the whole.

7296. It costs them less then?—It costs actually nothing except these little incidentals.

7297. What are the day pupils paying?—They pay 2s. 6d. a week. There is no grant ever given to them.

7298. Is there any limit to the number that you take?—Yes. We cannot take a day pupil if we have our full

Mr. W. T.
Laurence.

11 June, 1907

Mr. W. T. Lawrence. accommodation of resident pupils. We cannot take more than two or three day pupils at a time.

11 June, 1907 7299. Who does the housework?—We have two maid servants.

7300. The students do not do it?—No. The girls are supposed to keep their bedrooms tidy and make their beds, but beyond that they do nothing.

7301. Do you ever have any question, or have you ever had any difficulties as to discipline?—No, with the girls there is never a shadow of difficulty at all.

7302. But with young men of twenty-four, I should have thought it would be different?—One has to read the "Riot Act" now and then, but they have always succumbed to moral suasion. There is only one case on record of a lad using bad language, and I expelled him there and then on the spot on my own responsibility, because I thought it was one of those cases that might give the place a bad name, but beyond that we have never had any difficulty.

7303. Then with regard to the results of the teaching. I will test it by a question which has been put to other witnesses here. When a lad leaves school would he have sufficient chemical knowledge to understand and appreciate an analysis of manure?—Yes, quite that.

7304. Am I right in thinking that is the sort of information you wish to give him?—That is the endeavour.

7305. So that he should understand an analysis better than a lad who had not been to school, and had not had the teaching?—Quite so.

7306. What proportion of the pupils, both male and female, come from the two counties—are they mostly from Cumberland?—Three-fourths come from Cumberland and one-fourth from Westmorland, and that is the proportion in which the Governors are represented, and the £100 that you heard of from Mr. Howard, that Westmorland contributes, was supposed to be a fourth of the expenses, but it is not quite that.

7307. I should have thought that the agricultural population of the two counties was more nearly half and half, or more nearly equal?—No. Westmorland was not prepared to go beyond that.

7308. But the population. I say?—No, because in the matter of what was called "whisky money," it was something like £2,000 for Westmorland and over £6,000 for Cumberland.

7309. But I should have thought that the agricultural populations of Cumberland and Westmorland were very nearly equal?—No, nothing like it. I should think the agricultural population of Cumberland is three times what it is in Westmorland.

7310. But there seems to be a great number of small farmers in the Kirkby Stephen district?—Yes, but still the area of Cumberland is so great in comparison.

7311. But a great part of that area is devoted to mining, is it not?—No, not when you come to area. You do not get it so much in that.

7312. What I was trying to arrive at was this, whether you think there is sufficient accommodation for the small farmer, for what we call, and what I daresay you call, too, the dale farmer who lives in the dales and sells stock and milk. Is there sufficient accommodation for that class of men from Westmorland?—The only way we get at that is by application or demand. There is no necessity for refusing.

7313. Do you think it is possible if the existence of facilities at Newton Rigg were better known there would be greater advantage taken of the school, particularly if the results were more known?—I do not think so amongst the class of farmers that you refer to, because it passes through my mind now that the pupils we have had from Westmorland have been for the most part from the lower lying districts, where there are tillage farms more or less mixed.

7314. Would you then agree with me in saying that the present college facilities which already exist are not extended up into the dales?—I should think it lies more in this, that in simple sheep farming they feel less ignorance—they feel that there is less for them to learn, applying to their work. For instance, in the matter of food stuffs and in the matter of artificial manures and such things as that they are not bothered so much in the fell farming, and so they do not see the necessity so much for sending their boys to the school.

7315. Take the district of Alston, that is in your county, is it not?—Yes,

7316. There again you have a large number of fell farmers?—Yes.

7317. Surely there is scope for extending your attentions in that district?—We have only had two lads from the Alston district during the whole time.

7318. That, I think, confirms my suspicion, and I will tell you why I ask these questions. It is because it strikes me that in two agricultural counties like Westmorland and Cumberland to only put 10 pupils through a simple course like this is not doing all that might be done?—It seems little, but in the course of a few years it permeates into a very large proportion of them.

7319. What proportion of your farm is arable—how many acres are arable?—Fifty.

7320. And the rest is all grass, is it, or is it mostly meadow?—Meadow and pasture. But, of course, that does not really represent the grazing ground, because being farmed on a five-course rotation, we have always got 20 acres in first and second year seeds.

7321. Supposing you have a clever boy coming to your school, the son of one of the small farmers or labourers or hinds (I know the class of man coming to the school and meet them occasionally), the man who, when he wants to marry, saves money to set up a farm for himself—supposing you have an exceptionally clever boy at your school, I rather gather you do not encourage him to go on and get further education?—It all depends on how he stands in the examination. If, at the examination held by the Armstrong College Professor of Agriculture, the lad stands at the top of the Cumberland boys and another lad stands at the top of the Westmorland boys that come in, he has the first offer of the scholarship that is available at Armstrong's College.

7322. But supposing there are two?—The second one has to go without.

7323. Do you think that is a good system from a national point of view?—I am rather opposed to the majority of people who urge that point about sending the boys beyond that. My own personal feeling is that the best results that can accrue from teaching them at the Farm School are shewn when they go back to the farm and work as practical farmers.

7324. Then if there are exceptionally clever lads at Newton Rigg they do not want them—that is, boys capable of having their agricultural intelligence further developed—you are not prepared to do that at Newton Rigg. You do not think it is part of the scope and aim of the College?—It is one in seven every year. There are only seven Cumberland boys every year, and there is an opportunity for one in seven, and that is not a bad proportion.

7325. But that is a limited number. You might have none in one year and two or three in another, and only one of those can take it. There are no other means in the county of Cumberland. The educational ladder does not exist practically in practical work?—No.

7326. There is but one scholarship and if he cannot get that he has to go without?—Yes; but I believe that does not come quite under my purview. I think that there is still another scholarship that comes under a different class, a higher scholarship of £50, one of which is available at one of the agricultural colleges, or at Owens College. I think he can take the agricultural side of it if he likes and get on with a scholarship such as that, but it is the business of the whole county whether they come to Newton Rigg or not.

7327. (*By Lord Morton.*) I do not quite understand whether the question was actually asked, but supposing there are two vacancies and three boys come up or five or ten, how are the vacancies filled up? How is the selection made? Is it by examination?—No. It would run on these lines. Supposing the age question did not settle it, then the first applicant would get it. That is, the one that applied last would have to hold over till the next time. But as a rule if there is a lad just turned 16 who has not been on a farm at all, which fact they gather from his application form and the particulars he has filled up, he will probably be written to to say, "Your application will have to stand till next year"; but if they were on all fours then the last applicant would be put off.

7328. Do you consider that a more satisfactory way than some form of elementary entrance examination?—They have rather made those circumstances, such as position and so forth, weigh with them more than the school element in the past I think. I am not sure that an entrance examination would not be of some use but at first, of course, difficulties were anticipated in the way of

getting applicants and they did not wish to make more difficulties than necessary, and it has never been altered. It might not be so now. But it is very seldom that we have to refuse anyone.

7329. (*By Mr. Latham.*) With regard to the new pupils that Lord Barnard asked you about, you take all you can take in or that you have accommodation for, do you not?—Yes, we do now.

7330. But if there were more pupils you would refuse them simply from want of space?—Yes.

7331. I want to know a little more about your dairy school teaching. Have you them simply for the eight days' course or the ten days' course?—Ours is an eight weeks' course at Newton Rigg. The ten days' course is the course of dairying—that is, just plain butter-making in connection with our travelling dairy. It has not anything to do with the fixed school at Newton Rigg. It is separate.

7332. I quite understand that, but I want to know when they have done with that course, do they go further afterwards?—They go through no further course after they have been through the Newton Rigg course of two months.

7333. But after the dairy course of 8 or 10 days, what is your school course of dairy teaching?—I do not quite understand the question?

7334. What education do you give them on the different properties of milk?—In our dairy school they have regular lessons apart from the actual butter-making and practical work. They have regular lessons every afternoon concerning the composition of milk, and they have milk testing to do and so forth, and everything in that way, and lessons in matters that regulate the quantity and quality.

7335. Who teaches that?—The dairy teacher.

7336. The instructress?—Yes.

7337. Are they taught soft cheese-making?—Yes; that is the simple cream cheeses, double cream cheese and cream cheese which we find sells very well in the hotels.

7338. What sort of examination do they go through?—The Professor of Agriculture at Armstrong College sets a paper based upon their practical work, and upon the principles that have been taught, which has to do entirely with the nature and properties of milk, and the management of dairy cows and milk testing, and cheese-making and so forth. That is the whole of the work they have done and the principles that underlie that work. That is the paper examination. Then they have marks regularly given for their practical work, and those marks are sent up to the examiner, and he combines the marks they get for practical work with the results obtained on the questions in the examination.

7339. But they have no scientific teaching in dairy management beyond that?—No.

7340. How do you succeed in regard to the price of produce?—We just get the top market price for our butter and for our Cheddar cheeses. We sell them all almost retail. We make small cheeses of from 8 to 16 lbs. weight, and we dispose of about 300 of such cheeses in the course of a season at about 9d. per lb.

7341. That is the first time yet we have heard that you made any cheeses?—I gave that evidence in my original description—I said that we made Cheddar cheese.

7342. Then your daily school teaching means that you teach them the ordinary short course of butter-making?—No, it is a two months' course always at Newton Rigg.

7343. But the itinerant dairy is part and parcel of it?—No, it is quite separate. It goes from village to village. It merely teaches butter-making.

7344. That is not under you?—No.

7345. If they wish they can come to you?—Yes.

7346. Then it is part of you. If they do get on well with the dairy schools they come for what I call a higher class?—Yes, for a more thorough course.

7347. You do make soft cheeses and Cheddar cheeses of a small size?—Yes.

7348. And you are successful in that?—Yes.

7349. The education is eight or ten days with the itinerant schools and eight weeks in the other?—That is so.

7350. Then, if any of these girls in these dairy schools want to go further, where can they go to get scientific

knowledge?—If they want to go further they will have to go to the Midland Institute or to Reading or to Kilmarnock, or to some of those places, and pay for themselves.

7351. There is no scholarship attached?—No, we have not got that.

7352. Then you have no final examination?—Yes, at the end of the eight weeks' course. There is an examination, too, at the end of the ten days' course with the migratory dairy. There is an examination at the end of each course.

7353. What does that mean?—As to the ten days' course, I go at the end of the course with the dairy van or travelling dairy and relieve the teacher of all responsibility for the time being, and go into butter-making and upon the results of that the pupils get certificates with their marks upon them. Then at Newton Rigg at our fixed institution I have nothing to do with the examination at all. The Professor of Agriculture of Armstrong College conducts that.

7354. Are these girls who have gone further than that examination sufficiently qualified to go and take dairy work?—Yes, the majority of them.

7355. Then with regard to the boys, you make it a *sine qua non* that they should be two years on a farm?—We like it in that way.

7356. Does that mean that directly they go home from school they go on to their father's farm?—Yes.

7357. Supposing that they are not sons of farmers, how do you manage then?—Then they are at a disadvantage when they come to us. But they will pick up farming ideas better than they would in an ordinary way, from the fact that the majority of their fellow-pupils are farmers' boys, and they soon rub it into these other boys.

7358. But if they have left school at 14 and you will not take them till they are 16, then they get two years of idle life?—Yes.

7259. Does not that very much deteriorate their anxiety to go on with their education?—We do not think so. We think that two years' practical work is one of the conditions of success.

7360. But you do not quite understand my question. As to these boys that are not sons of agriculturists, and have no opportunity of being on a farm, they must do something from 14 to 16, and do you not take them until they are 16?—These lads never come to us. A lad that would come to us who has not been on a farm as a matter of fact is a lad who has gone from the elementary school to the secondary school, or has perhaps never been in an elementary school. They come from school straight to the age of 16 or 18.

7361. But the last witness said you had several pupils coming from the town who had not any knowledge of agriculture?—Yes, and those will come from the grammar schools.

7362. They would not have been on a farm at all?—No.

7363. What sort of students do they make?—I do not know what they make eventually, but they are the students who grasp the scientific teaching very well, and often do very well in their paper work, but they cannot see the bearing of it upon their actual work so plainly as the lads who have been on a farm first of all.

7364. What do you term the outsiders, because you said you had a good many outsiders?—No, not a good many—very few outside the counties of Cumberland and Westmorland.

7365. I thought you rather meant outside the agricultural element.—No, there are very few indeed.

7366. Can you give us an illustration of these men that you say go as farm bailiffs. Are they farmers' sons or are they better class agricultural labourers—they themselves, that is?—It is possible they may have been the sons of small farmers, but they have had to go out and hire themselves as agricultural labourers themselves, and then later on they come to us.

7367. You spoke of their finding such an advantage in your book-keeping?—Yes.

7368. How far does your book-keeping go?—We teach them the principles of book-keeping, that is, we teach them what the ledger means, which really is the foundation of book-keeping. Then we do not keep a very complicated set of books. There is just the diary in which the ready entries are made of money transactions and all other transactions, and then there is the cash book and the journal

Mr. W. T.
Lawrence.
11 June, 1907

Mr. W. T.
Lawrence.

11 June, 1907

to help them in posting their ledger, and then there is the ledger. That is all.

7369. I have been quite unable at present to find out what sort of experiments yours are. What are they?—Our experiments at Newton Rigg are carried on with all the crops we grow. In growing the corn crops, for instance, it may be one year half a dozen varieties of oats grown on equal areas and under equal conditions. Then those crops are weighed as they are carted home from the field and stacked, and they are weighed again when threshed so as to get at the actual weight of the corn and the approximate weight of the straw. Or it may be the same kind of oats are grown on different tracts, with the plots differently manured. Then in potatoes, the crop may be varieties, or the crop may be differently manured. With swedes, the same. There it is different manuring that is being done. For example, we are, at present, taking it in another direction. An acre of swedes is grown with artificials consisting of nitrate of soda superphosphate and kainit, and the adjoining acre to that is grown with nitrate and kainit, but with the same money value of basic slag instead of superphosphate. The swedes thus grown are to be eaten by sheep, the result is found in the mutton produced, the point being, does the basic slag or the superphosphate produce better value.

7370. Have you carried that on on the grass farm to try the value of manures there?—No, we have not been able to do that. We have to farm for the school to a large extent, and we do not want any sheep on the farm at all after the end of June if we can help it. We want all the grass for our cattle, because we have to keep a big dairy herd to keep our pupils going with milk so that we are rather too limited in the area of our grass land to be able to carry out any real feeding experiments as they do at Cockle Park Farm and other places as to manurial feeding qualities.

7371. Do you have any feeding with regard to milk production?—Yes; we have experimented a good deal in winter rations and some in the feeding of cattle, too, on the pastures. Perhaps we have carried out as many experiments as any institution existing in that direction.

7372. Have you carried out any experiments in milk testing?—Yes; we test our milk. Each cow's milk is weighed every morning and evening, and registered. Every cow's milk is tested on the first of the month, morning and evening.

7373. But not every day?—No, there is no testing every day.

7374. Do you do any analytical work?—Not strictly analytical—not more than can be done by the testing for butter fat, which is approximately correct, and, of course, the obtaining of the other solids in the milk by means of the specific gravity.

7375. Do you do anything of that kind with regard to manures?—No, we do not test manures analytically. We avoid giving the boys, when they are there, any ideas of actual testing of food or manures, we think that once a boy gets dabbling in analytical chemistry, it will rather tend to spoil him as a farmer.

7376. I was going to ask you how far you went with chemistry?—We go pretty soundly into our chemistry, so far as we do any. We expect a boy, for instance, to be able to do this—if you gave an analysis of dissolved bones, for instance, we should expect him to be able to give you the approximate money value, and we should expect him to be able to say what he understood by three per cent. or four per cent. of ammonia, and we should expect him to explain what was meant by 17 per cent. of soluble or insoluble phosphate.

7377. What lectures do you give?—There is lecturing every morning from nine to twelve.

7378. That is in the College?—Yes, in the school.

7379. Have you ever tried to lecture outside?—Yes. It falls on me to do all the local lecturing outside.

7380. Just tell the Committee what are the subjects you lecture on?—The breeding and rearing of stock, cattle and sheep, manures and manuring, feeding stuffs, the diseases of crops, the cultivation of the different crops, and lime and its uses and practically any other subject that is asked for. They deal with isolated subjects much in the same way as the Board of Agriculture's pamphlets deal in the written form.

7381. How far do you carry poultry management?—We keep 150 head of poultry and we do not go in for pure breeds, but we cross carefully. We cross with pure male birds with a view to keep up the difference between table

and laying qualities. The girls kill the poultry and dress them and truss them ready for market.

7382. Do they manage them?—They partly manage them and they have the dairy teaching too.

7383. Who is the poultry teacher?—The dairy teacher.

7384. Then really you have got your dairy teacher and yourself as the staff of the College?—That is the staff.

7385. You keep a matron, I suppose?—My wife is the matron.

7386. (By Dr. Somerville.) I had not the benefit of hearing your evidence in chief, so that if I ask you any question with regard to an issue you have already given information on, I hope you will pull me up. I want to ask you first of all whether some of these grassland experiments that you and I put down in the very early years of the nineties, are still being carried on under the original scheme—They are all being carried on—that is, all that were finally selected.

7387. That is the eight?—That is the eight. They are all carried on at the present time. But it has now been decided by the Agricultural Committee that they should give up those on what we call roughly the hard land, and simply keep to those on the peaty soil. There are a couple of newly reclaimed pieces of peaty soil that have been taken in hand.

7388. Do you know any place in England where the local experiments have been so persistent as in Cumberland?—Not unless the Northumberland and Durham ones have.

7389. Say the North of England then?—No.

7390. You believe then in continuing the same work upon the same areas year after year?—Yes, if you want to get certain results and get information.

7391. You have, in fact, been carrying on some of these local stations for, I suppose, very nearly fifteen years?—Yes, for fourteen years.

7392. In fact, except at Rothamsted, there are no areas of grassland which have got the same length of experimental history as in the North of England?—No.

7393. Do the farmers still maintain their interest in these local experiments?—The outside farmers do, but those on whose land the experiments actually occur are rather offering difficulties now.

7394. But I am not thinking about them so much as the others—the man on whose land the experiment is being carried on may be pretty well trusted to know what the results are, but do the others and the younger farmers take an interest in the results that you get?—I think so.

7395. Do you know that the Board of Agriculture have published schemes for field experiments?—Yes.

7396. Have you put any of these schemes into practice in Cumberland?—No, the only place in which we could have done it without enlarging our field of experiments, would have been at Newton Rigg, and we have not done it there because our stock feeding experiments have rather been in the way.

7397. But still you have got local experiments, I suppose, besides those on pasture land and those at Newton Rigg?—Not at present.

7398. So that you have not had the opportunity of putting forward schemes in that way?—No.

7399. Do you utilise the Board of Agriculture's leaflets in connection with local lectures?—Yes, a good deal.

7400. And also in connection with your courses in the school?—Yes.

7401. Do you, in point of fact, make it a practice to see that your pupils in the school are supplied with a set of the Board's leaflets containing information bearing upon your instruction?—Certain sets.

7402. I suppose you are appealed to by a considerable number of farmers with regard to their difficulties?—Very largely. I am glad to say, and sorry to say in one way. That forms a goodish bit of work at present.

7403. Then you think Cumberland farmers, hard headed men, and able farmers as they are, consider that they can get information of value to them by making application to their local agricultural school?—Yes, that is a marked feature of the present day. The old prejudice which existed and which was very strong, as you may remember, in early days seems to be practically broken down. My correspondence amounts on an average to something like twelve or fourteen letters a day, and the majority of them are concerned with questions asked by local farmers.

7404. Do you notice that this work is growing?—It is growing.

7405. I suppose, when you started at first, you did not get twelve or fourteen letters in a week?—No.

7406. Do you ever meet with any opposition now?—I do occasionally meet with old men who oppose, but it is broken down. We have strong evidence of that in the fact that we have got twenty cases where we have had two, three, or four, and in one case five children coming from some families, and it is almost certain that if we have one pupil from a family, and others of the family intend following farming, that these also become pupils, so that the instruction is being appreciated by the farmers themselves at any rate.

7407. You do not find any complaint that the pupils who have been through your school work less when they go home than they did before coming to you?—No, not at all. I do not think we keep them long enough for that.

7408. You have already stated you have very few pupils from Alston?—Yes.

7409. I suppose you would agree with me if I suggest that Alston is drained by the Tyne?—Yes.

7410. And that the natural route for an Alston boy to take who aspires to higher education is towards the east coast and not towards the west coast?—Yes, that is so, naturally.

7411. (*By Professor Middleton.*) You have been a teacher, I think, or have been connected with teaching all your life?—Yes.

7412. You have had a long experience?—Yes.

7413. Is your object in developing this Farm School in Cumberland, or the object of the county, to provide there the type of education which would be a practical education for the farmers of Cumberland?—Yes, that is so.

7414. As the result of your experience you have told us that you find the boys are suitably prepared for you when they have passed the seventh standard in an elementary school, and have had two years' experience on a farm—there or thereabouts?—Yes.

7415. Would you, as a matter of fact, prefer to have a pupil who has had that training which I have just indicated, or one who had gone from an elementary to a secondary school and had no training on a farm?—I should prefer the one from the elementary school who had had some training on a farm.

7416. You are absolutely convinced of the necessity of farm training to enable them to benefit by the type of education given, are you?—Yes, for the purpose of our education.

7417. Your general object when you get the boys is not to prepare them to go further, but to prepare them for farming?—Yes; of course there is nothing in the school course to discourage them in going further.

7418. No, but your object is to finish their education?—Yes, to make them successful, intelligent working farmers.

7419. A great deal has been said about the numbers you have—10, I think, is your number?—Yes: all boys.

7420. To begin with I dare say you found some little difficulty in getting the 10?—We did. We have never had much difficulty with the boys, but in the summer course with the girls we have had. We do not find any difficulty now.

7421. If your premises were enlarged, and you had a greater number of bedrooms now, do you think you could fill the bedrooms? Could you get 15 or 20 from Cumberland and Westmorland?—Possibly.

7422. You are not certain of it?—No.

7423. You would not be prepared to recommend it?—No, but we could easily get them if we take applicants from outside, because we are continually having applicants from outside the county.

7424. So that the type of school which you have in Cumberland, we may take it, has been found to be enough for the requirements of the county?—Yes, it seems to me so.

7425. Dr. Somerville referred to the experiments in which you have been interested in Cumberland; in your lectures to farmers, do you find much benefit from the results of

those experiments?—Yes, that is a very important point.

7426. It is in that way that you get their interest?—Yes, a great deal of it.

7427. You refer to your local experiments?—Yes, to our local experiments that we carry out all together.

7428. (*By Lord Barnard.*) Since I asked you about the population I have referred to the Census tables for 1901, and I find the total number of people engaged in agriculture in Cumberland was 16,700, and in Westmorland 6,600. It is not quite in the proportion of 3 to 1?—No.

7429. But on the other hand I also find that there are a larger number of people employed in agriculture in Cumberland than in any other occupation?—Yes, that is so.

7430. There are 15,000 males alone, and a certain number of females?—Yes.

7431. So that practically agriculture is the principal industry of the county?—Yes.

7432. It is more than double any other?—Yes.

7433. (*By Professor Middleton.*) We were told that the cost of the Newton Rigg School was £658. I am not quite sure whether that is the cost to the County of Cumberland or the entire cost, including Westmorland?—That is the annual cost to the two counties. It is the total annual cost. If you want to know how that is divided up, the loss on farming has been £100 in the year, taking one year with another, and the rest of the money is really the education salaries and the working of the schools and extras.

7434. (*By Dr. Somerville.*) There is rent or interest?—Our interest is equal to a rent of rather over £2 an acre; and, more than that, the place is always open to visitors. It is a big house, and they are big premises, and there is a good deal of ornamental garden work that would never be done on a farm, and that means an extra hand employed to keep the place as it is. Then there is the other point that we are limited in our farming conditions. We are two miles from the Penrith Railway Station, and if we engaged in the milk trade there is no easier place to engage in it than at Newton Rigg, but instead of that we just rear stock and make butter and cheese as could be done 20 miles from the railway station. It is more especially to keep cows that we do the farming, but we also keep sheep. In every way we are limited. At this time of the year, and the earlier part of the year, we are killing hens that are in full laying for the purpose of demonstrating in poultry work. That is not profitable, but it is still one of the necessities of the farm.

7435. (*By Mr. Latham.*) Do you do anything in horticulture?—No, not much. Practically I may say nothing excepting in fruit growing.

7436. What do you do in fruit growing?—We have a fruit demonstration plot, as we call it, of three quarters of an acre, and that is laid down in small fruit, and apples, pears, and plums in large variety and hardy kinds. It is in a very exposed situation. They are all plainly labelled. The fruit is attended to by the horticultural lecturer, and the idea is to show the varieties of fruit that do best in the northern counties and exposed situations, and there is grafting and pruning, grease banding and manuring and so forth. We issue bills to the villages round, and people come and see the work being done.

7437. Do you carry it on outside the school?—No.

7438. Not at all?—Yes, the horticulture is under the horticultural lecturer, who is engaged the whole of the year through visiting gardens and giving lectures.

7439. Is he one of your staff?—No, he belongs really to the Armstrong College. His work lies entirely in Cumberland and Westmorland.

7440. Do you get a grant from the Board of Education?—£70. But there is a question whether it will ever be obtained again. From the Board of Agriculture we get £100.

7441. But from the Board of Education?—I do not know whether it has yet been received, but we are told there will be a grant for this past year, and it may be £70 or £71.

Mr. W. T.
Lawrence.

11 June, 1907

Mr. JOHN SMITH-HILL, B.A., B.Sc., called and examined.

Mr. J.
Smith-Hill.
11 June, 1907

7442. (*By the Chairman.*) You are the Principal of the Aspatria College, Carlisle?—Yes.

7443. You have been Principal of the College for the past 13½ years, since 1894, that is?—Yes.

7444. Before that you were Agricultural Science Master to the Woodbridge School in Suffolk?—Yes.

7445. Will you give the Committee some idea of the number of pupils you have?—I have made out the numbers during the last five years, and in that time the total during the session in residence have been 34, 38, 34, 29, and 28—the 28 being the number for the present session, from October, 1906 till July, 1907.

7446. Your pupils mostly come from the public schools, do they?—At the present time they do.

7447. Such as Rugby, Shrewsbury, Charterhouse, Uppingham, &c.?—At the present time we have students from those schools and others.

7448. They are the sons of professional men as a rule, are they?—Yes.

7449. A few are the sons of large farmers?—Yes, we have always had some sons of large farmers in England and also from Scotland. The greater number have, however, generally been the sons of Scottish farmers, who seem rather to appreciate agricultural education more than the English tenant farmers do. I have had more farmers' sons straight from Scotland than England during the 13 years I have been there.

7450. And also students from India, Natal, the West Indies, and the Argentine, and India?—Yes.

7451. So that you have pupils from a great variety of places?—Yes.

7452. You have no grant from the County Council, have you?—None whatever.

7453. And no grant from the Board of Education?—No.

7454. You entirely depend on your own means?—Yes.

7455. The College is leased by the Principal from the trustee of the late Dr. Webb, is it not?—Yes, Dr. Webb was the Principal of the College until 1893. He gave evidence before the Commission on Agricultural and Dairy Schools in 1887.

7456. Therefore you rely entirely for the support of the institution on the fees from your students?—Yes.

7457. Now as to the age of entry of the students?—The students enter when they have had a good general education, because afterwards they specialise in agricultural subjects. They have practical and scientific instruction, and their age is, therefore, from 17 upwards.

7458. There is no entrance examination, is there?—No; there is no entrance examination.

7459. You prefer, I suppose, that they should have had a general education?—Yes, that is my opinion.

7460. You do not want them to be specially trained in what we might call secondary agricultural education?—I have had a little experience in that way. As I have already said, I was agricultural science master at Woodbridge School, where the Charity Commissioners formulated a scheme, under which I was the first agricultural science master. There was an Agriculture Department in that school.

7461. And an Agriculture staff?—An Agriculture staff, the school being in a specially purely agricultural district. I commenced the organisation of the scientific work there, and had the arrangement of the chemical laboratory and class rooms in reference to the science teaching. They were being built when I was there, but I left owing to my being requested to go to Aspatria as Principal. As to what under this Charity Commissioners' scheme the school is doing as an agricultural school now I do not know, but my opinion is, speaking from my experience, that at the age of 17 it is better to have had a good general education, and on that sub-structure to lay the special agricultural work, which can then be proceeded with alone.

7462. You are not in favour of an agricultural side being added to a grammar school, say?—No, not a purely agricultural side, but the scientific side will be developed as regards Chemistry and Biology, and the instruction will be of assistance to anyone after joining an agricultural college.

7463. A modern side?—Yes.

7464. Your pupils can go to the modern side of a secondary school?—Yes.

7465. Now as to the fees what do you say?—The fees per annum are from £94 10s. to £103 19s. per annum—30 guineas and 33 guineas a term.

7466. Thirty guineas when under 20?—Yes.

7467. Thirty-three guineas when over 20?—Yes.

7468. Then all your pupils are resident, are they?—They are all resident, but we may occasionally have one or two older men residing in the town who take the classes as out-students, but they are practically all resident.

7469. How many have you?—In the present session we have 28 residents.

7470. Then as to the destination of the students, what do you say?—For the purpose of this enquiry, I have gone over the college books, and I have looked to see where the students have gone since 1900, and I find that of 158 who have passed through the college during that time for varying periods, there are now 61 farming in the United Kingdom: 46 farming in the Colonies and abroad, such as in the Argentine; and 25 who are land agents and surveyors; and I find that nine have gone into business and have forsaken agriculture; and there are 17 whose occupations at the present time I have been unable to follow. I do not know, but it may be that some still have followed agriculture.

7471. Then as to your staff, what do you say?—The staff consists of five resident qualified lecturers having different departments. There is a lecturer in Agriculture and in Rural Economy, and there is a lecturer in Agricultural Chemistry, devoting himself to that work only, and another in surveying and Estate Book-keeping, who takes that work only, and another in Veterinary Science, who is really the veterinary surgeon of the district, who lives opposite the College. He takes the students to cases in the course of his practice, and gives lectures in the College. The last department is my own, Biology and Forestry.

7472. You think that staff is adequate, do you?—It is adequate for the number which the college will accommodate, which I consider to be from 35 to 40 resident students.

7473. Now with regard to the course of instruction, the complete course is one of two years?—Yes.

7474. At the end of it, they either obtain a diploma or a certificate?—Yes.

7475. What is the difference between the diploma and the certificate?—The diploma is obtained through an examination both in the first year and at the conclusion of the second year, and students have to reach a sufficient standard before the diploma is granted to them in the subjects which they have taken throughout their course.

7476. Then as to the certificate?—As regards the certificate, the certificate is, as it were, a second class diploma, that is, one which is obtained by those doing more practical farm work rather than so much college work—that is, who are going to the Colonies or to the Argentine, who spend a good deal of time in learning practical farming. These have their certificates in both their college working and their ordinary work awarded without having to reach a stated standard in examination, though they take the examination of the College at the end of their course.

7477. Do any of the students afterwards go to the University of Cambridge, say, or to Newcastle, and so on?—We have had one or two go to Cambridge in the course of my principalship, but not elsewhere. We have had students who are graduates of Cambridge who come to learn agriculture with us in order to take up land agency work; but not the other way.

7478. It is more the reverse?—Yes.

7479. The university graduate comes to you rather than that you send to the universities?—Quite so. But there are few of them in each case.

7480. A large number of your students only take the year's course?—Yes. A large number either go abroad after they have taken the year's work or go to practical farming and do not get the full benefit of the course which they should have.

Mr. J.
Smith-Hill.
11 June, 1907

7481. But you find they have sufficient appreciation?—Yes.

7482. Then the intermediate land agents' examination of the Surveyors' Institute is one of the examinations?—That is one of the examinations.

7483. That is passed by 18 out of 21 presented, I see?—Yes.

7484. That is a considerable number?—Yes, and we always hope to get everyone through. Eighteen have passed and three have missed.

7485. Then one examination is the National Diploma Examination?—Yes.

7486. Could you give to the Committee your opinion of that examination?—I think the National Diploma Examination is an excellent examination, and one which really requires a longer time to obtain the diploma in than is the general case in agricultural colleges. It is largely a course which requires three years for the first part and another year at least for the second part. I think that it is an examination which is much more appreciated by those who are becoming agricultural teachers and lecturers than by practical farmers or by those who intend to be land agents. Those who intend to be land agents appreciate the examination of the Surveyors' Institute as being more practical, and not requiring such a high standard perhaps of scientific attainment as in the National Diploma in Agriculture. I think that the subjects of the National Diploma Examination have not sufficient elasticity and that more alternative subjects should be possible to be taken in the first or second part instead of certain subjects being obligatory in the first part and certain subjects in the second part. I know that, for the last few years, representations have been made by which that has been met to a slight extent. I am a member of the Agricultural Education Committee and from time to time we have had a great many discussions as to the nature of the National Diploma, and we have made representations through that body to the Royal Agricultural Society.

7487. (*By Lord Moreton.*) Do you mean the Society of Agricultural Teachers?—Yes.

7488. That is rather a different thing?—It is called the Agricultural Education Association.

7489. (*By the Chairman.*) Then the amount of preparation which is required for the National Diploma is about the same as the amount of preparation that is required for the Agricultural Degree of the University of London?—Yes, I should say so.

7490. Of course you would encourage them to take the Degree of the University of London?—Yes, rather than the other.

7491. Now with regard to the method of instruction, what do you say?—Our method of instruction is by means of lectures in the morning and evening in the winter time. Of those lectures the students have to take rough notes during the lecture, and they have to be re-written in a certain time allotted for the purpose and handed in to the various lecturers at the end of the week, so that it can be seen that they have done good work in the course of the lecture. The practical work is divided into practical class work, and practical farm work. The practical classes consist of farm classes for each student once every week in which the lecturer in Agriculture takes the students to the farms around and teaches them or draws from them what they have learned by means of their practical work on the farm. It is done regularly every week for each student throughout his course, and there is also, of course, practical surveying, which is done on the land, and practical chemistry in the laboratories, and practical forestry by means of excursions through the woods adjoining, in order to learn as much as possible from the woods and plantations that are within a radius of five miles of Aspatia. In addition to that the practical farm work is engaged in by the students according to a certain time table. Each student of the college has a special individual time table in order that the principal may know where he is or where he ought to be throughout every hour of the day, and he may have some practical farm work in the morning. If he is a student going to the Colonies, he will have a lecture bearing on practical agriculture the first thing in the morning and then he may go to the farm to which he is assigned, to engage in whatever work is going on there, and then he may return to the college for another lecture in the evening.

7492. Then you have ten farms in the neighbourhood of the college taking about 2,000 acres, two-thirds arable and one-third pasture, which are valuable for your students?—Yes. The arrangements are made with the farmers

to allow access to these farms at any time on the part of the students and the lecturers for the purpose of instruction and for the practical students to learn practical work. A payment is made to these farmers annually for that purpose.

7493. At one of the farms demonstrations are carried on in manures?—Yes. For the purpose of demonstrating our object in experimenting is not at all that of experimental study but simply demonstration, to enable the students when they are farming afterwards, to carry out experiments in order to find what proportions of the artificials with or without farmyard manure they should use that was best for their land.

7494. Then the lecturers take your students to the weekly stock and produce auctions which are held?—Yes; we have one close to the college on Thursdays.

7495. Do they find that a very valuable object lesson?—Yes, they are able to find the prices of stock all the year round and they get some practice in estimating their value and weight.

7496. Then you have a dairy?—We have a factory or creamery at the railway station at which instruction is given in butter-making and cheese-making. Cumberland is not a district for cheese-making, but a certain amount of cheese-making goes on, perhaps mostly for the purpose of giving our students instruction in cheese-making.

7497. Then also I suppose your students are allowed to see the book-keeping that is carried on at the creamery?—No, they do not see any system of book-keeping there.

7498. That is not yours, is it?—No, it is a private creamery belonging to a company—it is Carrick's Cumberland Dairy.

7499. Is it carried on according to proper hygienic and scientific principles?—Yes.

7500. Under a competent manager?—Yes, under a competent manager there. The creamery is very valuable for us, being in the neighbourhood, so that we may make arrangements for the purpose of instruction in butter-making.

7501. Do you say creameries might be increased in the county of Cumberland?—Judging from what the object of the production of the milk is that goes on in Cumberland, I do not know whether I should be able to answer that in the affirmative, because the farmers of Cumberland are engaged in supplying dairy cows to Edinburgh mostly, those cows being kept during their lactation period in the town dairies in Edinburgh. The farmers, of course, could, I think, supply milk to creameries in the district which might collect the milk and pass it on to places like Edinburgh and have a different system. Under the present system, as long as town dairies are allowed in Edinburgh the Cumberland farmers rise to their opportunities, and they breed stock which are appreciated because of their deep milking qualities in Edinburgh, and they would, no doubt, under an alteration of the system, rise to the occasion as well.

7502. But meanwhile they keep them in Edinburgh?—Meanwhile they send them to Edinburgh. There is a farmer and dealer in our own district who takes 50 to 60 dairy cows every week to Edinburgh, to the town dairies there.

7503. And a certain number are received back?—Yes. They come into the district again and may return to Edinburgh, but the majority of them are sold at rather a considerable depreciation to the butchers, "half-fat," and the Cumberland farmers say that if the dairymen, when the cows are going off milk, would put them to a bull of a good dairy strain, they would be then received as to any number of them by the Cumberland farmers at a much higher price than the dairymen can get for them from the butcher "half fat."

7504. Then do I understand that the farmers remain owners of the cows while they are at Edinburgh, or do they sell them to the dairy?—No, the farmer sells them to the dealer. He takes them to Edinburgh and sells them there to the dairymen.

7505. Then as to forestry, you have already mentioned in your proof that you visit the plantations of Sir Wilfrid Lawson?—Yes.

7506. In the College grounds you have placed an arboretum?—Yes, for the purpose of teaching identification of trees, the object being for such students to learn to know the various forest and ornamental trees that are met with on a landed estate in the country.

7507. Then you also make use of an agricultural co-operative society?—Yes, that is a co-operative society

Mr. J.
Smith-Hill.
11 June, 1907

which is an association of farmers in the neighbourhood for the purpose of obtaining artificial manures and feeding stuffs and seeds amongst themselves. It is a co-operative society.

7508. And it is successful?—It is successful.

7509. Is it managed by farmers?—It is managed by a committee of farmers.

7510. And the farmers are shareholders?—Yes.

7511. Then you have instruction in carpentry?—Yes, and in smith's work and harness mending at workshops in the neighbourhood of the College.

7512. And for internal work there are two lecture rooms, a drawing hall, chemical laboratory, biological laboratory, and natural history museum?—Yes.

7513. So that your equipment is quite satisfactory?—Yes, we consider so.

7514. Your College is also a climatological station of the second order?—Yes, for the neighbourhood, that is.

7515. And you find that very useful?—Yes.

7516. And good for the training of the students?—Yes. We obtain the records of the weather for that portion of Cumberland and we return them to the Weather Office. I think it is perhaps more for the benefit of the general public rather than for the benefit of our students that that work is done.

7517. As you have already mentioned, you are not, except of course in regard to the farms that you use, in touch with the farming community?—We are in touch with the farmers in Aspatria, those in our own district, and the work of the College has influenced to some extent their practice, but not in a general way in the county.

7518. But your object is essentially to train those who go to you?—Yes.

7519. You devote yourself entirely to that?—Yes.

7520. (*By Lord Barnard.*) Yours is entirely a private institution?—Yes.

7521. It not only receives no public money of any sort or kind, but it is not under any public control or authority, is it?—No, it is not under any, whatever.

7522. You are not associated with any public authority in any way?—No.

7523. Would it be a good thing if you were, do you think, or have you ever had any idea on that point?—We have had in the College up till recent years one class in agriculture held under the Board of Education of an evening under the Science and Art Department. But those ceased to be recognised by the Board of Education last year. They were attended by a fair number of outside students, the sons of farmers in the district, in addition to our own students, but of recent years the number of outside students has dropped off.

7524. Do you think that in any organised system of providing higher and better agricultural instruction and information your institution could be made use of?—I have been told so, and perhaps I might say here that just before coming in I met Mr. Medd and he said he was sorry he was unable to stay to hear my evidence, but he asked me the same question, and he said that he thought that Aspatria could come under the Board of Education, not the Board of Agriculture, under Clauses 35 to 43 of the Technical Institutions if a scheme were submitted.

7525. I did not mean so much what was possible, but I meant whether in your opinion, as having been here for 13 years and more, and in your general experience, you thought such a thing was expedient, and whether it would be of practical and public utility as well as not detrimental to the school. But perhaps you have not gone into that?—It is not a question I have given a great deal of thought to, because we have been altogether independent of public authority. We have had to obtain our students by the quality of our work simply, and I have not entered into the question, thinking that private institutions have no means of being organised under authority, I have not really considered the question.

7526. You know what the reference to this Committee is, I daresay?—Yes, I have the reference.

7527. It is to enquire into the provisions for affording technical instruction, and then to report whether in view of the practical results obtained the existing facilities are satisfactory and sufficient, and if not, in what manner they may be with advantage modified or extended?—Yes.

7528. I thought perhaps the future of your college came within the scope of that. I do not know whether you wish the Committee to take any view of yours on that subject?

—Seeing what has happened with most proprietary institutions, many of which were established before the County Council colleges, it would probably be better for the continued existence of the College if it were united with some scheme of that kind.

7529. I do not know what accommodation you have for students?—Thirty-eight.

7530. Are you ever full?—Yes, we have been full from time to time.

7531. Does the number of students show a tendency to fall off?—Yes, I think the number has of recent years.

7532. I will ask you not to answer the next question if you think it will be in any way detrimental to the institution. Please just say so if you think so. Do you think that in the altered circumstances of the present day there is any probability of the College being continued on its present footing. Pray do not answer that if you think it would be detrimental to your College?—I think I would reply to it, because it is a question that I have faced. I think that possibly in the event of my discontinuing the lease of the College as Principal it would not continue as an agricultural college.

7533. Then, assuming that your interest ceased when you left, do you think it would be a pity from a public point of view that the institution should collapse?—Yes, I think it would be.

7534. You think it would be desirable that some steps should be taken to put it on a more permanent and safer footing?—Yes, I think it is highly desirable, because as regards the natural facilities for giving agricultural education, its situation in Cumberland is very favourable, and I believe it is largely owing to that that the College is in existence at the present day.

7535. And it is well equipped?—Yes.

7536. It is equipped with laboratories and so on?—Yes.

7537. And the result, so far as you have already given us the numbers actually, are that since 1900 60 men to your certain knowledge are engaged in practical farming at home and 46 abroad?—Yes.

7538. Then another sixth are engaged in the allied industry of land agents?—Yes.

7539. So that for many reasons it would not be desirable to allow it to collapse if means could be found to carry it on?—Yes, I am strongly of that opinion.

7540. Speaking of your own career as a teacher of these special subjects, were you associated with agriculture in your early youth before going to school at all?—No, I was not. I graduated at London University, I took the degree in arts and the degree in science, with honours in botany. My bias lay towards what I may call natural science subjects, and on the suggestion of my predecessor, Dr. Webb, whom I knew then, he advised me to get further training in agricultural science work, and for that purpose, by means of classes and spending my vacations at farms, I qualified myself for the examinations of the Royal Agricultural Society. I also went to Germany and France to study the organisation of agricultural schools and colleges. I took second place in the senior Royal examination of those days, and by virtue of that I obtained the post of agricultural science master at Woodbridge School in 1892.

7541. Are your staff much in the same position as yourself?—Yes, they are all qualified men, either having obtained the National Diploma in Agriculture or the science degree in agriculture of one of the universities.

7542. Are they men who have been brought up on farms?—All of them have spent their lives on farms. The principal is the only one who was not brought up on a farm though he lived in the country.

7543. (*By Lord Moreton.*) Will you tell me if your examination at the end of the course for the College diploma is conducted by an outside examiner?—It is conducted by the lecturers themselves.

7544. There is no outsider?—No, we have no outside examiners.

7545. What year was it when your candidate was successful in the National Diploma Examination?—In 1902.

7546. Have you got anything like a committee or board of visitors?—No, nothing of that kind.

7547. I suppose, as far as regards forestry, that is a new departure rather with you, as in most places?—I have had a class in forestry all the 13 years I have been at Aspatria. Sir Wilfrid Lawson has helped us in the past a good deal; in fact, a year or two ago he put eight acres at our

disposal in order to enable us to carry on demonstrations which would illustrate sylvicultural principles.

7548. For all these years have you had a forestry nursery, shall I call it?—Yes, we had an arboretum, but I have not had it all these years. That was started in 1902. It is only five years old.

7549. I think you told Lord Barnard just now that you had passed the Senior Examination of the Royal Agricultural Society?—Yes.

7550. Do you consider, looking back at it, that that was more practical than the Diploma Examination?—The old Senior examination of the Royal Agricultural Society a more practical examination than the present one, do you mean?

7551. I will withdraw the word practical, and say a better examination?—I think that the change into two parts was a step in the right direction. The students are not obliged to take the whole examination as I did at one sitting. I think the examination being made into part one and part two in different years is certainly a step which has been for the benefit of the examination, and not only the examination, but the pupil—I mean the benefit of the pupil taking the examination, I should have said.

7552. (*By Mr. Latham.*) Do any of the County Councils allot scholarships to your college?—The Cumberland County Council have a scholarship, or rather their scholarships are tenable at Aspatria College if the student desires it, but as you will know, they have an agricultural scheme of their own in connection with the Farm School at Penrith; consequently the scholarship has not been held at Aspatria except by one student I think at the time that I went to Aspatria. We have not had any scholarships from the County Council since then.

7553. In the early days of the County Councils I think other counties gave scholarships to Aspatria, did they not?—At the time that I went to Aspatria there were scholarships from a great many counties at Aspatria, from Lancashire, from Warwickshire and from Berkshire and others. That was on account, I believe, of the result of the previous Commission, because Aspatria was pointed out as being a school then more for tenant farmers, and one of the few in existence at that time; but owing to the growth of the County Council institutions, the constitution, I may say, of Aspatria has become altered.

7554. That would account to some extent for the students falling off, would it not?—Yes, that would account for it. The numbers were greater in these days.

7555. What is your first and second course?—Our first year's course is a more general course. For instance, in chemistry and botany, the general principles of the sciences are taught to the students in the way, for instance, that they would be questioned at the National Diploma Examination on those subjects. In the second year they will more particularly confine themselves to the special agricultural portions of those sciences.

7556. But would the first year students be eligible for the National Diploma?—They would be eligible to take it, but they would not have done sufficient work to take the National Diploma in one year's time.

7557. I presume there it is a great difference in regard to the fees as between one and two years?—The fees are the same per annum. The second year's fees will be the same as the first year's fees.

7558. What I rather meant was, did it open the college to a poorer man, I will say, if he only went to the first year's course. I know, because I belong to Berkshire and was instrumental in sending two or three students to you in the early part of the time, and I know they used to recommend the two years' course?—Yes.

7559. What I want to know is this. Some men cannot afford to go for two years, and I presume if they only went the first year it would be considerably less money, and considerably less education?—It would be just half what it would be for the two years.

7560. You spoke of the examinations being almost entirely inside. Do you discourage outside examinations?—No; I gave a wrong impression if I said that. The question asked me was, "Were the examiners outside examiners or was the examination of the college conducted by the lecturers of the college themselves?" I understood that was the question.

7561. But I will go a little further. We have had witnesses very much in the same position as you, who spoke against, I may say, outside examiners, and I did not know whether there was any feeling in Aspatria with regard to that and whether the examination should be conducted

by your body or by outside examiners?—I should not like the examination to be conducted absolutely by outside examiners, but personally I have no objection to examinations conducted by outside examiners associated along with the actual teachers.

7562. Do you carry out a system of entirely practical work, or is it all associated partially practical and partially scientific?—It is partly practical and partly scientific. That is to say there are no students who might perhaps be called farming students, who simply go to work with farmers and take no college work at all, if that is your meaning.

7563. Generally I suppose you expect them to have some considerable practical knowledge before they come to the college?—No; we have a large number of students who have no knowledge whatever of agriculture and who have to learn the practical part of it in the course of their residence there. The majority of them are in that position because at the present time, speaking of course of the present time, as I said earlier, we have very few sons of farmers, and where we have sons of farmers of course they will have had some knowledge of practical farming, or we may have occasionally students who have passed some time (we have at the present time one or two of those) on farms as farm pupils for a year or two years, and then they come to the college for scientific training.

7564. Which do you prefer, may I ask, provided that they are going to be farmers afterwards?—If there was an organised system of training I think that some knowledge of the practical work before entering college is better. The student will gain more than if he comes green to the college.

7565. Your idea is that the man that comes with no practical knowledge of farming would be better to have the scientific training at the latter end of his education than going to the farm after he has had a scientific education?—Not quite so much in that way perhaps. When I say that it would be better to have some knowledge of practical work, I mean he appreciates the lectures in college if he has some knowledge of practical agriculture. He appreciates them better and sees their meaning and tendency better than if he has come without any practical knowledge of agriculture and came directly from a town. The proportion of practical work would be better obtained (speaking more of ideal cases really) by having a student a year or so at it. I am referring to the boys and young men from the towns who would benefit more by a college course after having been a year on a farm and then going to the college than if they went to the college directly from their school. The practical objection to such a course is that if they have been long on the farm first they will be disinclined to return to the routine of educational training.

7566. Whether they were town men or countrymen?—No, my remarks only refer to town men.

7567. (*By Professor Middleton.*) Can you give us some idea of what proportion of your students come from country and from towns now, because you say a large number come from public schools?—Yes, of course, a number of them come from the country, but they are not farmers' sons, although they have a general knowledge of country life. They have not anything like the practical knowledge of a farmer's son.

7568. The numbers entering your Institution at present would be something like 15 a year, would it?—More than that. To give you the number for this last year, 15 entered in October, one entered in January, and five entered in May.

7569. Then they do not all stay for the two years, do they?—No, they do not.

7570. You have 20 entering this year and 28 students, so that there must be eight of the second year's students?—Yes, of course. That would be the number of second year's students that we have.

7571. Of course, those who think of going in for an examination must all of them have stayed two years at least?—Yes.

7572. Do many of them stay for three years?—Occasionally. I have one at present who has stayed three years, in order to go in for the Cambridge agricultural diploma, and he was examined last week.

7573. Have you had many going in for the National Diploma of recent years?—No, not in recent years—not since the constitution of the college has become altered.

7574. That is to say, you are getting now a different type from what you had in the past?—Yes.

Mr. J.
Smith-Hill.
11 June, 1907

Mr. J.
Smith-Hill.
11 June, 1907

7575. How do you manage the practical education of those lads that come to you with no knowledge of farming in their first year?—They are assigned to a particular farm. They go to one farm at certain times allotted in their time table, and they take part in any of the work that goes on. There is a general oversight. The lecturer in agriculture visits the farm from time to time while they are working there, and sees if they are at work, and every inducement, stopping short of absolute compulsion (which is not applied) is given to students to work practically by means of a weekly report in which marks are given for practical work to each student, and by means of a terminal report in which the position they have taken in that respect is recorded and sent to the parents and guardians, and by means of farm medals that are awarded at the end of the year to the best farm student. These are generally keenly competed for.

7576. You have ten farms altogether?—Yes.

7577. So that you have about three for each farm?—Yes, three or four—never more than four on any particular farm. It may be two or three or four.

7578. Is the farmer under any obligation, or is it a friendly act on his part that he looks after them?—He is not under any obligation other than the obligation arising from the fact that he is paid in order to do so.

7579. You do pay them?—Yes, the farmer is paid a sum per annum to allow the students to work on the farm. Sometimes, of course, the farmer benefits considerably by their work, for instance, at hay time.

7580. As a rule do you allow the same students to go to the same farms?—Regularly to the same farm. It is always best to keep to one particular farm for some time, in order to get acquainted with that farm; but, at the same time, in his practical farm class, which he also has every week, he goes round all the farms in the neighbourhood, so that he gets really to learn something about them all.

7581. The practical farming class is taken by a practical agriculturist, is it?—Yes.

7582. Does he take all the students together?—A certain number on a certain day. Each one has a regular day in his time table and he keeps to that day throughout the term in his class.

7583. How many hours are given to agriculture in the first year, about?—In the winter session from October to April there are two lectures in agriculture in the day and two in the evening—that is, four a week; and in the summer there are two in agriculture in the week for each student, or 110 in the course of the year.

7584. (By Lord Barnard.) When you talk about the students working, what is the nature of the work they do on the farm? You mentioned haymaking?—They take part in anything that is going on; they take part in the milking, for instance; they do the harrowing, threshing, and, to some extent, the keen ones get to take up ploughing. Any of the farm work, the feeding of the cattle in the winter time or the feeding of the stock in the byres, they do.

SIXTEENTH DAY.

Wednesday, 12th June, 1907.

PRESENT :

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.

Lord MORETON.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor W. SOMERVILLE, D.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. BRUCE SWANWICK, called and examined.

Mr. B.
Swanwick.
12 June, 1907

7585. (By the *Chairman*.) You are a member of the Agricultural Committee of Gloucestershire?—Yes.

7586. Will you give the Committee some information as to the instruction of adults in agriculture in your county?—At present it is confined to lectures given by itinerant lecturers in agriculture, in some cases in veterinary science, by horticultural instruction, by village courses of lectures on gardening, and also through the medium of experimental plots, and of course of late there has been a development in the way of nature study exhibits and educational tents at the Gloucestershire Show. The agricultural lectures to adults have not been developed very much. They are single or short courses of lectures to adults, and there has not been any very great demand for them, and I do not think they seem to produce as much result as one could wish.

7587. They are not well attended?—Not as far as I know. We had some at Cirencester, and I do not think they were particularly well attended. I think the adult farmer wants the information brought to his door in a visual concrete form, and I think much more can be done by experimental plots which can actually be seen by individual farmers than by printed reports of experiments in other places, or by lectures.

7588. You attach great importance to experimental plots?—Yes, not from the point of view of research so much as of demonstrating broad principles with regard to manuring and so on.

7589. They should be continued over a number of years?—I think it is essential that they should be continued for a considerable number of years, in order to eliminate the difference of seasons and accidental variations.

7590. Are the experiments on the experimental plots carried out by the lecturers?—They are carried out entirely by our director, who is also lecturer in agriculture.

7591. You have a permanent lecturer in agriculture?—Yes.

7592. Is a scheme drawn up for the lecturers by your Committee?—He has a scheme which is passed by the Committee.

7593. Approved by them?—Yes.

7594. The same applies to the experimental plots?—Yes. Might I say that I think it would be a very good thing if local Chambers of Agriculture and societies were made to interest themselves in these experimental plots. If a scheme of experiments was carried on through the medium of, say, the Chamber of Agriculture, and if a discussion upon the results took place at their meetings, I think it would be of advantage. That used to be the case at the Cirencester Chamber before the county undertook the experiments. They were undertaken by the agricultural professor at Cirencester as a private individual, and I attribute the fact that the level of farming in the neighbourhood of Cirencester is extremely high, to that, and you do not see so much tendency to use patent manures.

Farmers prefer to use the simple constituents rather than made-up manures. I attribute that very much to the fact that these experiments were carried out by the professor of agriculture at Cirencester in connection with the Chamber of Agriculture, which had at that time an experimental fund. These experiments were carried out over a considerable number of years, and discussion took place once a year or more on the results of those experiments, and the individual farmers at whose farms the experiments were carried out gave their views also. I think if a body of farmers hear from a neighbour, whom they respect as a good farmer and a man of business, the result of some manurial experiment that will have very much more effect than what they see in any printed report.

7595. Is there any co-operative society among the farmers in Gloucestershire?—Yes, there is a co-operative society at Cirencester. This is the second year of its existence.

7596. Do the farmers take shares in that co-operative society?—Yes.

7597a 7597. Do you buy manures?—Yes, we buy manures and feeding stuffs and so far it is a very successful society; it has not a very large membership but it is growing, and it is very successful. Farmers are enabled to make very good terms by joining it, and I think everybody who deals with it is satisfied. I have not said anything about horticultural lectures in this connection. Of course they are chiefly given to adults. I think that more effect is visible from horticultural lectures than from agricultural lectures. You see the horticultural lectures are given by a man who is an expert to people who are not experts; whereas every farmer considers himself an expert in his own business, and is less ready to accept anything from an agricultural lecturer than a cottager is from a horticultural lecturer, and in some parts of the country you can see a great effect from these horticultural lectures in the production of produce for shows; and in the Lydney district they have a horticultural society at which various matters of horticulture are discussed at weekly meetings.

7598. Is the horticultural lecturer a permanent official?—Yes, he is a permanent official now. For about three years we have had a permanent official, but formerly we only had one who gave part of his time.

7599. Do gardeners attend the horticultural lectures?—Yes, generally a few of the gardeners from one or two of the bigger houses attend, and quite harmoniously give their views and criticise the lecture.

7600. The inhabitants of the cottages also attend the lectures?—Yes, there is a very good attendance in some places—60, 40 and so on.

7601. They are a great success?—They are a great success. There are also experimental plots where experiments are carried out on various varieties of potatoes, those are carried out also by the horticultural lecturer, and recently he has been trying experiments on the advantage of using imported seed from Scotland as against the seed grown in England.

7602. Are any lectures given on fruit?—Yes; generally the course is divided into lectures on fruit growing and vegetable growing, and also demonstrations are given in somebody's garden as to the best method of pruning; and in the orchard district these demonstrations take place in orchards, and a very marked effect is visible in respect of the management of orchards.

7603. You give instructions as to how to lay out orchards?—Yes; and how to prune the trees. In Gloucestershire the custom is to let your tree grow according to its natural habit; but I believe, through the influence of the horticultural instructor, there is a tendency to manage the trees more—to prune them more.

7604a 7604. Now, with regard to the education of farmers' sons, you have some evidence to give us?—Yes. I think much more result is to be expected from the education of farmers' sons. Recently, the Agricultural Committee have recognised that the longer the course is, the more good it is likely to do and the more valuable it is. And, acting on that principle, they have enabled the director to devote a certain amount of time every week to three continuous courses. The one at Berkeley is a course extending over the whole winter, six months—about 24 lectures, I think, are given once a week at Berkeley. It is in connection with the prize given by Lord Fitzhardinge. In order to qualify for this prize, the competitors must do well in an oral and written examination on practical agriculture. They must also correctly estimate the relative weights of a number of cattle and sheep and pigs which are submitted

to them, and they must pass their opinion as to the value and soundness of cart horses. They must thatch a rick in the best and most workmanlike manner on the farm, where they reside, and they must execute two perches of hedging and ditching. So that a prize is given not only for a written paper, but also for practical work. Of course, I think these classes are started under peculiarly favourable conditions. You have the incentive of a prize of £10 which is not to be despised; you have also the personal influence of Lord Fitzhardinge and his agent, Mr. Peter, who is an extremely practical man, and who is respected as such in the neighbourhood: he is a practical man, who does not despise science, and therefore it gives these classes a very good start. I do not think we could expect that in other districts we should have quite such easy work. We should not have these influences all tending in the same direction.

7605 Do you give a certificate at the end of the course to those who attend—is there any examination?—I must refer you to our director, whose evidence comes later, for that.

7606. Who gives these lectures?—The lectures are given by our director under the Agricultural Sub-Committee.

7607. Is the Agricultural Committee a Sub-Committee of the Education Committee?—Yes.

7608. You are all members of the Education Committee?—There are some co-opted members.

7609. (By Lord Moreton.) May I ask what the other courses consist of?—I should like to refer you to our director for that. I have heard a great deal about the Berkeley class, but not so much about those at Laverton and Charfield, so that anything I might tell you would be second hand.

7610. (By the Chairman.) You think that these courses might be developed in the direction of a winter school of agriculture?—Yes. I think that is the most hopeful development at present. It would not involve any very great capital expenditure, and, if it was not successful, we should not have committed ourselves to any substantial capital expenditure.

7611. You are acquainted with the winter schools in Holland?—I paid a visit to Holland.

7612. Perhaps you will give the Committee some evidence with regard to these schools?—The winter schools in Holland are carried on in about 10 provincial centres in that country. For the most part they have no actual farm attached to the school; they usually have a small plot of ground on which experiments are carried out on a small scale. The staff consists of the State agricultural director of the province, who, *ex officio*, is the head of the school. He has other duties, of course, to carry on. He has to carry on experiments in the province, and has to advise public bodies who have land as to the management of their land, so that he does not give the whole of his time to the winter school, even during the winter. He has a permanent assistant, who is usually an elementary schoolmaster who has been through a special agricultural course for which provision is made. Those courses are given by the agricultural director as one of his duties. Then there is a veterinary instructor, who is a local veterinary surgeon, who gives part of his time, two hours a week, to each class; a total of four hours a week. Then there is a natural science master from one of the elementary schools in the neighbourhood, who gives the instruction in botany and book-keeping and arithmetic generally, and a science master from one of the secondary schools gives the instruction in chemistry.

7613. The pupils who attend those schools, as a rule, come from the elementary schools; they have not attended a secondary school?—I really could not say but I should think they come both from the elementary school and from the higher Burgher schools.

7614. The instruction given is both theoretical and practical?—Yes. There is no farm attached, but the pupils are taken on the neighbouring farms in order to have practice instruction. The school that I saw, was at Dordrecht; there it was held in a building in the town. There was a small chemical laboratory with simple apparatus; the sort of apparatus that is required in a dairy for testing milk; models of animals and plants for the purpose of teaching animal and plant physiology and so on, but otherwise no elaborate apparatus at all.

7615. They attend for more than one year—they attend for two winters?—Yes, they attend for two winters in succession.

7616. At the end of the second course they can obtain a certificate?—I imagine so. I am rather at a disad-

Mr. E.
Swanwick.
12 June, 1907

7604b

Mr. B.
Swanwick.
12 June, 1907

vantage, not having a knowledge of the Dutch language, and therefore being unable to look up my points in the publications which I brought home with me at short notice. I cannot tell you therefore whether a certificate is given at the end.

7617. In a school that I know a certificate is given at the end. That school is mainly a horticultural school, and to that school is attached what is called a pomological garden, and as the district is a district of orchards the main subject of instruction is connected with orchards and operations in orchards?—Is that the school at Naaldwyck?

7618. No, that is one at a place called Tiel. The director of that school is at the same time what you might call the adviser of the district; that is to say, farmers consult him upon any subject connected with the laying out of orchards. He is at the disposal of the farmers, and it is in his instructions to give advice to the farmers. I suppose you found at Dordrecht also that the gentleman at the head of the school was consulted by the farmers of the district?—Yes. The organisation seems to be exactly similar, except that there is no farm attached. I saw an exactly similar organisation to the one which you describe at Naaldwyck, in the Westland.

7619. That was entirely horticulture?—Yes, entirely horticulture. They had a garden attached to that school which was carried out on scientific lines by a co-operative society of gardeners, and the pupils had free access to the garden.

7620. That is in the grape growing country?—Yes.

7621. You think that schools on those lines might very well be instituted in this country?—I do. I think an important feature of the Dutch system and one worthy of imitation is the way in which the educational resources of the locality are laid under contribution by the winter school, so that where there is a secondary school with an instructor in chemistry or plant physiology their services are made use of; these instructors giving some hours of their time in each week to the agricultural winter school.

7622. The plant at such a school as you have already mentioned, which you called the higher Burgher school, could be utilised if it was elaborate enough for the purposes of the winter school?—Yes. As a matter of fact, I think the school that I saw was independent, and had its own laboratory. It was a very simple laboratory. There is also the point that the veterinary instruction is given by a man who is actually a practising veterinary surgeon in the neighbourhood. I had not quite completed my description of the staff. One important member of the staff is the dairy instructor; he is an officer of the local co-operative dairy. In England of course we have not co-operative dairies in every neighbourhood, but in Holland I expect they have. He gives the dairy instruction; he is a dairy expert.

7623. They admit students to the dairy?—I do not think they have the run of the dairy; I am not sure, but of course it would be a great advantage if they could have the run of the dairy. I heard some criticisms of winter schools in Holland. One of the criticisms was that it occupied the time of the director too much, that the success of the winter school really depended upon the director being able to keep in touch with the neighbourhood, and that if his time was monopolised by the winter school the supply of pupils fell off. I believe the tendency in Holland—I speak of three years ago—is to have what was described as a more or less continuous winter school, that is, a school extending for eight months in the year with a long vacation during the busy period of the year.

7624. Extending the course?—Extending the course, and practically having a man whose whole time is given to the school, not an agricultural director for the province, but a headmaster or principal of the school.

7625. Those schools are attended not only by farmers' sons, but also by the sons of labourers?—I cannot say, but of course in Holland the occupiers are very much smaller than they are in England, and I should think the division between the labourer and the farmer is not so marked as it is in this country.

7626. With regard to the farm at the school at Basing, you have some observations to make?—I see a great advantage at all events in the experimental stages of winter schools by not starting with a farm. I think that a county should not commit itself in the first place to the capital involved in having a farm attached to the school.

7627. You are of opinion that it would be easier to start a number of winter schools if a farm was not added to them?—Yes.

7628. The expenditure therefore being kept down?—Quite so. And then, as agriculture is primarily an industry and only secondarily an art and a science, I think it is an advantage that the pupils should learn their farming at home. As a matter of fact, the people who come to these schools are the sons of farmers. People do not leave other classes of society in order to become farmers, and we practically only want to train the sons of farmers—at least, that is the first object—and I very much doubt whether a model farm can be carried on on economic lines; that is to say, whether a pupil who is a son of a farmer can learn the business of farming better on a model farm than he can at home. I think he requires to be taught the sciences which are ancillary to agriculture. I think he wants scientific instruction, and to get his mind opened so as to enable him to become receptive of new ideas and to carry them out for himself.

7629. The practical instruction given in winter schools should be accompanied by visits to the ordinary farms in the neighbourhood?—Yes. I think if the pupils are taken to visit the best managed farms in the neighbourhood it would be better than having a model farm attached to the school. It seemed to me that the great deal of time which was spent by the pupils at Basing in doing a large amount of manual labour might have been better employed, because I do not think the manual labour is essential, as they will get plenty of that, probably, afterwards.

7630. Will you give the Committee now, some information as to the experiment of a rural science class at the Cirencester Grammar School?—That was taken up as an experiment. Our director approached the headmaster of the Cirencester Grammar School and asked whether it would not be possible to start a rural science class at the Grammar School. The headmaster was not particularly sanguine about it, but he was willing to give the experiment every opportunity. It was started, and the result is that since last September, our director has had a class handed over to him. At first, the class was only for one hour a week and now it is for two. It has been, as far as it goes, a success. That is to say, those scholars who belong to the agricultural class, who possibly have an eye to the scholarships offered by the County, are only too ready to attend this class and are naturally interested in the subjects taught. The headmaster has gone on the principle of drafting into the class, any boy who is likely to be specially interested in the subject. I had, perhaps, better leave it to Mr. Turner to give you a more detailed account of it, but I have it from the headmaster, that so far it is a success.

7631. Then with regard to the technical instruction for farmers' sons and labourers, you think that ought to include classes in agricultural engineering and care of machinery and hedging, ditching and thatching?—I do. An agricultural engineering class has recently come under my notice, and I have been agreeably surprised at the amount of interest shown in it. We have a very good instructor, who was at one time a practical blacksmith, but who also is a man who has had, I should think, a good deal of education. He goes on the principle of teaching them every detail about an agricultural machine. For instance, he takes it completely to pieces and puts it together again as far as the time will permit, and the pupils are taught handiness with tools—how to manipulate them in a machine in the right way.

7632. These classes have been given at various centres have they?—They have been given at one centre previously and now they are being given at the second centre. They are a kind of development of the farriery classes which were principally confined to shoeing and smith's work generally. I think it would be possible to combine with these classes a certain amount of elementary instruction in the principles of mechanics which, I think, for a man who has to deal with machines all his life, ought to be of considerable educational value. I think if he understood the elementary principles of levers, and so on, it would be an advantage.

7633. As regards horticultural instruction, you have short courses at village centres?—Yes; I described those in my instruction of adults.

7634. With regard to the influence of the Royal Agricultural College at Cirencester, on the agriculture of the district you have something to tell us of that in the past, and also in the present?—I described before the effect I attributed to the interest taken in the matter by the Professor of Agriculture and the experiments carried out under the Cirencester Chamber—the influence on the general practice of manuring for swedes in the Cotswold district. Of late years there has been no organised system of experiments carried out by the College in the neighbourhood, and, of course, since county councils have offered facilities to farmers for having food stuffs and manures

Mr. B.
Swanwick.

12 June, 1907

7634_n analysed at a purely nominal rate, the College Laboratory has not been consulted to the same extent. You can get a sample of any feeding stuff or manure analysed for a shilling and consequently the farmer is not inclined to pay ten shillings. Of course, the shilling does not pay for the analysis at all, and it would not be possible for any private institution to analyse cake or feeding stuff at that rate. Consequently, the College has been deprived of this means of really being of use to the neighbourhood. In matters of botany, entomology, plant pests, and parasitic pests, I do not think the College has been consulted by the neighbourhood. In the first place, the professors of botany and entomology are, for the most part, young men fresh from the University who stay for a limited period of years and have not had time to become experts in the agricultural branch of their subjects. It takes a good many years to become an expert in agricultural entomology and in agricultural botany.

7634_b

7635. Is any experimental work done by the College?—At present it is confined to experiments on grasses, which experiments have been carried out for a period now of 15 years, perhaps. Formerly there were experiments on other crops, but of late years they have not been carried out. Generally, there is a small feeding experiment of bullocks and pigs being carried out on the small experimental farm attached to the College, and this year the Professor of Chemistry is trying some experiments on the new forms of nitrogen—lime nitrogen.

7636. Do farmers visit those experiments on the farm at the College?—I do not think so.

7637. Then, as to the character and value of the education given at the Royal Agricultural College to the farmer and to the land agent?—I think the education is of great value to the farmer and to the land agent, but I think at the same time the curriculum is too crowded, and I think the official examinations, such as the examination for the National Diploma, is partly responsible for this. I think the whole education wants focussing more on essentials. Otherwise the result is that you get a somewhat hazy knowledge of a wide field instead of a clear perception and remembrance of cardinal points. I think it attempts too much.

7638. You think it is too ambitious?—I think it is too ambitious—that it covers too wide a field, and does not enter sufficiently into essential details. The time is too much occupied in covering a varied field, and sufficient attention is not devoted to the more important details. It wants putting on a practical basis. I do not know whether it would interest the Committee to hear an instance of the sort of thing I mean.

7639. By all means?—In geology, for instance—I am speaking of my own time which is some time ago—I do not think enough importance is attached to the surface geology as opposed to the geology of strata. I think the time spent in learning how to identify a stratum by means of its fossils is merely waste of time in these days of geological maps. I think, again, in the case of entomology, too much time is spent in giving a complete account of the structure of various forms of insects, and too little time is spent on expounding such books as Miss Ormerod's, which is a practical book on farm pests.

7640. Do farmers send their sons to the College?—Certain farmers do, but the smaller proportion of students are farmers' sons.

7641. And land agents?—Yes; a good many land-owners and land agents send their sons, and a good many men of means send their sons, who want them to take up farming more as a pleasure than as a means of livelihood.

7642. With regard to the information supplied by the Board of Agriculture through the medium of leaflets and market returns, have you any observations to offer?—I should like to confine my remarks to market returns. In the first place, it is more a question of distribution than of the actual matter that is contained in the returns. They always seem to me to arrive too late to be of any use. I have recently been taking the market returns, and in two cases I booked the dates on which they were printed and the dates on which they were delivered. One return was five days late after publication, and the other was 12 days late after publication. I got them from Messrs. Wyman, the printers, and, consequently, I got them, I suppose, in the most direct way. Then I think it is most important that farmers should be induced to pay attention to live weight as a criterion of value. In certain markets animals are bought and sold by live weight, chiefly in Scotland, but there is one important centre where animals are bought by live weight in this country, at Shrewsbury, and I almost

always fail to find any notice of Shrewsbury in the market returns, and in one case where it was noticed, the animals which are sold at such and such a price per live weight were not sufficiently clearly distinguished in order to enable an intending purchaser or seller to arrive at the value of his particular class of stock. For instance, I think it is most essential when you are quoting live weight that you should know that animals of so many cwt. are selling at so much, and that animals of a larger or smaller weight are selling at so much; whereas in the returns they simply stated in this particular case, "At Shrewsbury, Shorthorns from 27s. to 35s. per cwt." That is not enough to enable any practical man to judge of the value of his stock if he wished to buy or sell.

7643. (By Lord Barnard.) Will you complete what you said just now by telling the Committee in what way you would connect the importance of these market returns with the subject of education or instruction. It is more in the nature of information really for the agricultural classes?—That is perhaps so. It is information. Also I think it might be called instruction to farmers—teaching them the importance of live weight and offering facilities to them to buy and sell by live weight.

7644. Is any use made of these returns—or perhaps the director himself will tell us that. Does he use them to illustrate his lectures?—I think, if they were accessible, he would. He ought to try and instil into farmers the importance of buying and selling by live weight.

7645. Are there any other subjects on which you would like to give us information generally?—I think not.

7646. You have given us a most interesting account of the winter schools in Holland. I was going to ask you whether you could tell the Committee for how long a period each of these schools were carried on. You have partly answered the question by stating that in some cases they were extended for so long as eight months. Can you tell us the nominal length of those schools?—I think they are six months—the winter half of the year.

7647. Do they continue throughout the week or are they only held on certain days?—I think they are continued for five days at least—I have a note here, "Five days and six days." The actual hours at Dordrecht were 24 hours for first class, that is to say, first year's scholars, and 27 hours for second class scholars, the second year's scholars.

7648. Do the scholars live at home and come in the morning, or are they in any way boarded in the town?—I think some come every day and some are boarded. I did not hear of any particular system of registering lodgings.

7649. Do I gather it is your opinion that a somewhat similar system might with advantage be adopted in this country?—I think so. Of course, it very much depends on finding a suitable centre which is easily accessible from the surrounding districts.

7650. What you would suggest should be done in the way of providing buildings. I think you told us in one case there was a simple laboratory attached to the school in Holland?—To take Gloucester as an example, we have the use of a block of buildings which was formerly a barracks. We have a dairy school there, and there is a large room above the dairy which might be made use of as a class-room. I do not know whether the County Laboratories could be made use of.

7651. That would only provide for the neighbourhood of Gloucester. You would require more of these schools in the county, would not you?—No; Gloucester is fairly accessible from a large part of the county, but, of course, not from everywhere.

7652. (By Lord Moreton.) From about two-thirds of the county, is it not?—Yes. I should say from quite two-thirds of the county, and further, we admit the principle of travelling allowance in necessitous cases for pupils to come to the schools.

7653. (By Lord Barnard.) You informed us that in some cases part of the instruction was given by teachers from the elementary schools and in other cases by teachers from the secondary schools. Do you think teachers in this country could find the time to do that in addition to their ordinary duties?—The teacher in the elementary school I mentioned is permanently attached as assistant to the director of agriculture; he is a man who commenced as an ordinary elementary teacher but who has taken a special course in agriculture; the other teachers that I mentioned, of chemistry and botany, only give part of their time.

7654. Supposing we adopted such a system in England the part of the time which was given up to this purpose.

Mr. B.
Swanwick.
12 June, 1907

would have to be charged to this particular branch ?—Yes, quite so.

7655. And, therefore, would add to the cost ; it would be part of the cost of carrying on these classes ?—Quite so.

7656. You know, I daresay, the terms of reference to this Committee, to enquire into the existing facilities, and to report whether they are satisfactory and sufficient. I will not go into the question of satisfactory, but do you think the existing facilities in the County of Gloucester are sufficient ?—No, I do not think so ; it would be impossible for us to carry on a winter school with our existing staff, for instance.

7657. I see, on looking at the 1901 census—it is only of males of 10 years and upwards, but, perhaps, that is sufficient for this purpose—a very large portion of the population in your county are engaged in agricultural pursuits, over 30 per cent., which is a far larger proportion than in regard to a great number of the other counties, so that in your county I assume you would want a great development of facilities for agricultural instruction ?—I think so, certainly.

7658. That would require more funds ?—It would, certainly ; we are at the very end of our funds at present.

7659. Is there an increasing disposition, as we have heard exists in other counties, on the part of your County Council to diminish the amount voted for agricultural education ?—Well, there being a shortness of funds there is a general competition for them, and I am rather afraid that the urban classes carry fully as much weight as the agricultural classes.

7660. It strikes me with the very large proportion of agriculturists in your county you ought to get a larger proportion of the "whisky money" ?—Yes, I think we ought, certainly.

7661. I suppose in view of the difficulties at the present day with regard to secondary education, and so on, that is probably not to be hoped for ?—No ; I am perfectly certain it is not.

7662. If the Committee were to say, guided by your evidence, that the existing facilities are insufficient, what would you suggest that the Committee should advise should be the source from which further funds should come ?—As the State admits the principle of supporting collegiate centres I think it might equally admit the principle of supporting centres which have the object of instructing classes which are quite as much concerned, in agriculture.

7663. If it were suggested as the result of this enquiry or otherwise, that the whole system of agricultural instruction should be rather more elaborately organised on a national basis, would you approve of that with counties as the units, if I may use the term ?—Yes, broadly speaking, I think so, certainly.

7664. You would not object to, I will not call it interference, but further guidance and control from the central department ?—No, I do not think so ; that would be a condition of more funds ?

7665. Yes, I do not suggest it unless you get more funds. Are you one of the Agricultural Correspondents of the Board ?—No.

7666. Do you know anything about them ; have you any opinion on the subject of their utility or whether their utility could be increased ? Have you ever come across them, or have you ever had occasion to use their services ?—No. I know the local correspondent in our particular neighbourhood ; he is a man who has made a fortune by farming, as a matter of fact.

7667. Their services might be utilised, perhaps, to some extent in connection with the organisation of agricultural instruction ?—I do not think, if they were drawn from the present class, they would be any good at all.

7668. What is the class in your neighbourhood ?—Successful retired farmers.

7669. I was a little surprised at your saying that it was not necessary to have a farm attached to an agricultural school, in your opinion. Of course, I quite agree with the view you expressed that lads can better learn the manual processes on their own or their father's farm, but do not you think it is of advantage to have such a farm as probably you saw at Basing for the purpose of demonstration, shall I call it ?—Yes ; I think a small out-of-door laboratory, so to speak, is most useful, and also, I think, dairy instruction is very useful.

7670. Do your county give any higher education scholarships ?—Yes.

7671. Are any of those used for agricultural instruction

at places which give higher agricultural education ?—We have a possibility of sending two scholars for two years to a collegiate centre ; and at present we have two men at Reading.

7672. That, I suppose, you think is a useful feature ?—Yes.

7673. If suitable lads could be found probably that might be developed ?—Yes, it is an incentive to those lads.

7674. To put it another way, it would be a very hard case if a really clever lad came under the notice of your instructor, and there were no means of enabling him to further develop his knowledge and intelligence if his parents were unable to send him to a higher collegiate centre—Quite so ; I certainly think there ought to be an outlet beyond the intermediate agricultural school to a collegiate centre.

7675. Then you agree with me that the system of scholarships ought to be developed for suitable lads ?—Quite so.

7676. I am not quite sure what your position is with regard to the College at Cirencester ?—I am an old student.

7677. I was at not all certain whether you were associated with the management of it in any way at present ?—No, I am not ; my father is tenant of the College Farm, so I am more or less associated with it—not personally.

7678. (By Lord Moreton.) Would you tell us about the average age of those who attend the classes at Berkeley ?—I think Mr. Turner would be able to tell you more definitely about the age.

7679. You told us there were three courses at Berkeley, Laverton and Charfield. Have you had any classes in the Cotswold district ?—No.

7680. No courses in forestry ?—No.

7681. Do not you think that courses might be held with advantage in that part of the county ? It is entirely devoted to agriculture, is it not ?—Yes, quite so.

7682. The population is very scanty, and I think it is entirely devoted to agriculture ?—Yes, the farms are mostly large and the population scattered, and I do not think the sons of the farmers would be inclined to avail themselves of the classes as the sons of the farmers round Berkeley do ; they are not so much on the make, so to say, they are rather too well to do.

7683. You mentioned that technical instruction classes had been held for farmers' sons and labourers. I was not quite sure whether you said the first class was held at Gloucester.—The first class was held at Chipping Campden and the second class is now being held on my own farm at Coates, near Cirencester.

7684. You will agree with me that the County Council analyst has practically taken over the work of the college laboratory ?—Yes, the County Council analyst has taken over the work of the laboratory at the college in the way of analysis.

7685. How much do you expect an institution receiving not a single penny of public money to do for the general public ?—I do not expect it. I think it is a pity that there being an institution there it could not be in some way made of use to the general public.

7686. I think you have been very successful as regards your experience at the examination for the National Diploma—I think you passed ?—No, I do not think I did. I went up for the Royal examination, and I believe I made very high marks, but at the same time I did not pass all the subjects.

7687. The senior examination ?—Yes. Might I say now that I think the examination for the Surveyors' Institution offers many points for imitation.

7688. Are you of opinion that it would be better if the examination for the National Diploma could be held in various centres and also if steps could be taken to make it a more practical examination ?—Yes, I think so.

7689. By more practical I mean if a candidate could be examined in botany and entomology and subjects of that nature practically on the land ?—Yes, and there might be a branch devoted to agriculture and to dairying—I think it should be sub-divided.

7690. It is already, as you know, divided into agriculture and dairying ?—Yes.

7691. Have you taken any interest in forestry ?—No.

7692. (By Dr. Somerville.) Can you tell the Committee why the system of field experiments that were conducted by the Cirencester Chamber of Agriculture and which were so successful have been given up ?—It is very

Mr. B.
Swanwick.

12 June, 1907

ancient history; that took place in the year 1870, I think. The experimental fund came to an end and the enthusiasm in the experiments died out. I think it was partly due to the influence of the professor at that time who was Professor Wrightson.

7693. I suppose you consider it desirable in these field experiments that the points should be duplicated again and again?—Yes.

7694. And that the same experiments and demonstrations should be repeated at different centres?—Yes, certainly.

7695. Do you know that the Board of Agriculture have prepared schemes for local experiments and that these have been printed and circulated?—Yes.

7696. Have you found these schemes of any use to you in your district?—I believe the experiments are more or less based on those schemes.

7697. Perhaps you would rather I asked the director about that?—Yes.

7698. I think you have indicated your approval of the course of instruction that is given in connection with the classes at Berkeley, have you not?—Yes.

7699. You, I think, do not approve of the instruction in the practical processes of agriculture as carried out at Basing. In point of fact is not the instruction at Berkeley and Basing very similar, or what is the difference? Why do you approve of the instruction at Berkeley and do not quite approve of the instruction at Basing?—I approve of the instruction at Basing, but I do not think the two are comparable. The boys at Berkeley go once a week and the boys at Basing are spending the whole of their time there.

7700. Yes, but I thought that in connection with the work at Basing you were of opinion that the sons of farmers could best learn the processes of agriculture upon their fathers' farms, and yet I take it that the class at Berkeley is composed to some extent of farmers' sons, and that there instruction is being given in the processes of agriculture?—The class work at Berkeley is theoretical; the practical work is by means of competitions.

7701. Do they not get instruction in the processes of agriculture such as hedging and ditching, and thatching and sheep shearing?—I believe the judge passes criticism on the work done, and they get a grant for hedge cutting and so on.

7702. Do I understand that they do not get the instruction in the processes of agriculture at Berkeley and are only examined in them?—They are only examined in them, but I did not address my remarks to manual processes such as hedging. Hedging is a thing that farmers do require to be taught; it is really more a landlord's matter than a farmer's, and it is consequently neglected by the farmer; he does not care a bit about the hedges as long as they will last his time.

7703. Rick thatching is a thing that is also taught at Basing?—Yes, I think that is a thing that should be taught at local classes.

7704. (By Mr. Latham.) Why do you consider that the lectures to the farmers were absolute failures?—I do not think what I said was quite so unqualified as that. I said they were not so successful as the longer courses and the veterinary lectures.

7705. What you said led me rather to infer that the prejudices of the farmers were so great that the lectures were a failure?—I do not think one gets so much result from them as one would expect.

7706. Might I just ask you to tell us what the lectures were on?—It is an impression; I cannot tell you definitely what lectures were a failure.

7707. I am a farmer myself, and I am rather against the feeling that farmers are so prejudiced that they will not listen to advantages offered to them if they are on the right lines?—Of course, that qualification of yours makes all the difference.

7708. It is a very serious qualification because naturally we do not want to be taught what we feel we can teach?—Quite so.

7709. If the lectures are on sensible lines I think I can say farmers are very much inclined to listen to them?—Yes. Might I say that I think lectures on the purchase of food stuffs and manures, and lectures on how to purchase by unit, and how to arrive at the value of manures in that way are most useful and would be much appreciated.

7710. And again on dairy work?—Yes, I think that is

a matter on which farmers would derive great benefit from lectures.

7711. So that I think I may almost ask you to admit that if the county councils were so disposed and were to get lecturers to go about to the different "market ordinaries" and give lectures to farmers after their meals they would in all probability be successful and be listened to?—They might be. We tried one experiment at Cirencester; that was not particularly successful, but I do not know that you can draw a general conclusion from that.

7712. Were not the demonstrations you spoke of appreciated?—Which demonstrations are those?

7713. You spoke of demonstrations which were highly successful. Did not the farmers appreciate those?—On what subject?

7714. I did not learn on what subject. I particularly noticed you said that on the other hand farmers appreciated the demonstrations?—I think I was referring to experimental plots.

7715. Are not there many lectures that might be given on experimental plots?—Yes; I think in connection with the experimental plots they are most useful. That is rather the point that I wanted to emphasise, that you must have your experimental plot in order to illustrate the lecture and get the farmer to listen.

7716. Your experience has shown you that to endeavour to teach farmers agriculture is a failure; they will listen to horticultural lectures rather than to agricultural ones?—The classes are different in the two cases; it is the smaller man who comes to the horticultural lectures.

7717. It does not apply to quite the same class of man, then?—No.

7718. May I ask you on what lines you advocate this valuing of cattle by live weight. I happen to know Shrewsbury very well indeed, and I think it is the finest market in the country, and I wish the system was compulsory. The teaching of people how to estimate the value of cattle by live weight is a very important subject in agriculture. How would you advocate that should be taught?—I think if the practice was general in markets people would learn for themselves.

7719. You do not advocate it being part of the curriculum that they should be taught how to value animals by live weight?—Yes, the estimating and the judging of the animals by live weight and seeing them weighed afterwards and so on.

7720. Would you take it right through to the butcher's shop?—Yes; in the case of a feeding experiment, for instance. I think the farmer is at a disadvantage as compared with the butcher in estimating weight.

7721. He has not the same experience, possibly. I could not make out what you said about letting a man learn the manual labour after having been taught the better class of agricultural education. Do you think they will take on manual labour after they have been thoroughly educated?—Was it in reference to Basing.

7722. No, in your evidence generally?—I think what I meant was that it was not worth while having a farm in order to teach pupils manual labour when the pupils are drawn from a class who would probably learn manual labour at home on the farm.

7723. I will put it the other way, then, do not you think the practical part of agriculture is very much better taught early in life than later and that the scientific part should be the latter part of a man's education?—Yes, generally speaking, I think so, but I was comparing a farm school with a winter school and taking into consideration the additional advantage to be derived from having a farm attached to a school, that is, whether it was worth having a farm in order to give this manual instruction.

7724. Do you not think that the only way—to speak from my own experience—of teaching a man farming at all is to teach him on the farm; you cannot teach him in a college?—No, quite so, but what I meant was as you are teaching farmers' sons who have an opportunity of learning it at home, is it worth while to have a farm attached in order to have facilities for teaching them the practical part of farming when you might at very much less cost have a winter school without a farm attached?

7725. Then you make the man scientific too early and not sufficiently practical. I have had the pleasure of knowing your father. I know the Cirencester farm very well. Would you give the Committee your experience of the good the farm is to the young men at Cirencester.

Mr. B.
Swanwick.
12 June.1907

What time do they spend on the farm?—I think it is entirely a matter of the individual how much interest he takes and how much time he wishes to spend. Of course there are personally conducted classes which everyone is supposed to attend, but apart from that it is a mere matter of choice how much time they devote to it.

7726. I would be very pleased indeed if you will explain to the Committee pretty much what the life of the student on the farm is?—A large proportion of men come to lectures and spend the rest of their time at games and so on, very often the out-students go back to Cirencester where they have various pursuits I suppose, but they do not spend much time on the farm. Perhaps, three hours a week or an hour a day in a personally-conducted farm class.

7727. I have had the opportunity myself of stopping at Cirencester and seeing the bailiff come in the morning and take those students that were willing round the farm with him. Is that an ordinary thing?—The class is conducted by the agricultural professor; there is no farm bailiff now.

7728. Now with regard to the sons of large farmers in Gloucestershire and your immediate district, you made the remark that they were all affluent or too well off to listen to scientific instruction. Is that so? I find that most of the men who are farming at the present time are pretty much trying to get a living at it whether they are large farmers or small?—Yes, I think they are.

7729. And if education is to be of any value at all, I should have thought those men would have been just the very men who would have been most likely to have profited by it?—It is only an impression. I think you will find that Mr. Turner will more or less confirm my view that they would not probably be so keen as the class of man you find at Berkeley. Of course that does not mean that one ought not to try the experiment on the Cotswolds.

7730. Then with regard to this manual instruction of hedging, ditching and so on, you are under the impression that the competitor when he comes to take his prizes is properly taught, and it is simply to show to the world at large that he knows something of the business in which he is engaged. You do not give any education in hedging and ditching at all, and when he comes to compete for these prizes he is supposed to be fully educated and an expert in it?—In the Berkeley classes I believe there is no previous training.

(Mr. Turner.) They have had for some years a hedge-cutting class, and young farmers instruct one another so far as thatching goes.

(The Witness.) From time to time there have been classes in connection with the Berkeley Hunt in hedging. I was misinformed as to whether there had been any instruction, but it is not given by the county.

7731. I do not think it ought to be myself. I think the farmer himself should give his men the instruction and let them come there to compete. I only wished to know whether that was the line you advocated?—I personally attach great value to classes in hedging. I have seen them in Wiltshire and they have been most successful there.

7732. I think the farmer ought to teach them himself?—He is not always an expert at hedging himself.

7733. Then he ought to be?—He ought to be.

7734. I think you said, going back to your first remarks, that the results were limited to the experimental plots and the exhibits at agricultural shows. What did you mean by "the results were limited"?—I did not mean to say they were very much limited. I was referring to this branch of instruction to adults, and my point was that more result was to be expected from experimental plots than from lectures, or, rather, when the lectures were reinforced by experimental plots there was more result to be expected than when they were not, and also I meant that educational exhibits as bringing the actual results of the experiments before the farmer in a diagrammatic form had a peculiar value.

7735. With regard to the horticultural instruction and your short courses at village centres, is that meant entirely for labourers?—They are open to everybody, but the majority of those who attend are cottagers, artisans and labourers.

7736. You live in the midst of a very large apple-growing district, and there might be lectures given with very great advantage indeed on horticultural subjects to that class of people?—Yes. In the Vale I think they have

a special reference to fruit-growing, and as I say demonstrations are given in the orchards with regard to pruning and so on.

7737. Is that carried out by the Agricultural Committee?—Yes, the horticultural instructor is controlled by the Agricultural Committee.

7738. Is this Agricultural Committee a Sub-Committee of the County Council?—Yes.

7739. Are you a member of the County Council?—No; I am a co-opted member of the Sub-Committee.

7740. What is about the amount of money that this Sub-Committee gets allocated to it by the County Council?—About £1,600, £100 of which goes in scholarships.

7741. Do your scholarships all go to Reading?—We have only given two so far—this is the first year—and they were both sent to Reading. We give the scholars a choice of going to any agricultural school that is approved by the Committee.

7742. You really do not mean what you said that the Correspondents are principally well-to-do farmers and men that take little interest in it?—No. I said the representatives of the class in my particular neighbourhood was a successful retired farmer.

7743. And that they really knew very little about what went on in the district?—No, I think the question was as to what part these Correspondents might be expected to play with regard to any extension of the control of the central Board over education.

7744. I know a good deal about some of these Correspondents and I know they are rather valued than otherwise and I should be very sorry to hear anything said here, which would depreciate the interest of the Board in their Correspondents?—I do not know really the principle on which the Correspondents are selected, as to whether its operation is capricious or otherwise.

7745. I get correspondence from all over the country asking me to put certain questions to this Board on different matters, and I think the system is a good one. With regard to the market returns I am rather with you in what you said. I think they are rather late when they are issued, and that they do not go anything like wide enough. Can you give us any information as to how you would like them to be improved?—I do not think I can give you any useful information except on the point I have mentioned. Wherever there is a possibility of quoting live-weight prices I think that they should be quoted, and that they should be quoted sufficiently specifically to enable anyone who wishes to make use of them.

7746. I do not suppose you would recommend that they should be issued twice a week?—I think it would be a great advantage.

7747. To have them twice a week instead of once?—Of course it is a question of what the cost would be. If I were using them I should like them twice a week certainly.

7748. Are they not more in the shape of statistics than market reports. We get the market reports in the papers, but these are regular statistics which we get all over the country. You think they might be very much added to?—Yes.

7749. (By Professor Middleton.) I should just like you to repeat what you said about the Correspondent. I understood you to say that your local Correspondent was a man who had been so successful at farming that he had made a fortune at it?—That is so.

7750. You were yourself at Cirencester?—Yes.

7751. How many years were you at Cirencester as a student?—Two years and a term.

7752. You gave it as your opinion that the curriculum was overcrowded and that not enough time was given to essential subjects. I should like you to indicate what you consider the more essential subjects for the young farmer are?—Well, for instance, if you take physics the instruction is more or less a text-book instruction in physics. I should like to see the principles of mechanics explained with an actual machine there. I should like to see the application of the principles applied to a machine by somebody who understood both the principles and the machine, and the same with geology, I should like to see more attention paid to surface geology as opposed to a complete knowledge of the strata.

7753. Do you think the student would understand the bearings of surface geology if he had not studied the principles first?—No.

7754. In your opinion, would you improve the course by shortening the preliminary period spent upon principles or by shortening the whole time given to the subject, taking the principles first and the application afterwards?—I think for the agricultural expert it is most essential that he should know both the principles and the application of them. I doubt whether you can combine the education which is suitable for the expert and for the practical farmer. I think the attempt is made, but I doubt whether it is successful.

7755. Your idea would be to make the education for the practical farmer an education dealing chiefly with the application of principles?—He should have a sufficient groundwork in the principles, of course. But, for instance, you know Mr. Fream's book on soils. A land agent is consulted about the purchase of property, and it is important for him to know the agricultural characteristics of the different class of soils, and I think if more attention was paid to the characteristics of soils it would be an advantage.

7756. You think in the study of geology the student could do with less text-book and more of the characteristics of soils?—No, I would not say so exactly; I think he ought to have the groundwork of geological knowledge.

* 7757. That means more time. They attempted to give you both, and you said that not enough time was devoted to the practical application?—I should say so quite unhesitatingly with reference to entomology. I do not think it is necessary to know all about the structure of insects. I think you want to know the particular insect which is a friend or a pest to a farmer. Geology, of course, is a thing which brings in water supply and all sorts of things where a knowledge of the principles is more important.

7758. (*By Mr. Davies.*) From this map you will perhaps observe that Gloucestershire is one of the counties marked white—there is no collegiate centre for higher agricultural education?—That is so.

7759. What I should like to know is, what is the opinion of your Agricultural Committee with regard to that. Have they any scheme in mind either of starting a collegiate centre in one of the counties adjoining Gloucestershire or in Gloucestershire itself, or of becoming attached to some existing collegiate centre?—No scheme has been formulated. I do not know whether individual members of the Committee may have a desire to be attached to some centre, but no scheme has been formulated. The Committee has not discussed the matter as a Committee.

7760. With regard to other educational projects, I mean

to say in sending students to colleges, I suppose they give scholarships for other things besides agriculture?—I believe so.

7761. Are you in any way attached to the University College at Bristol?—I am afraid I cannot answer that.

7762. Supposing at Bristol they were able to develop an agricultural department in connection with the University College, do you think that Gloucestershire would be able to support it to some extent, and to send their students there?—Bristol is at the very extreme end of the county, of course, and geographically it is not the most suitable centre.

7763. You prefer to send your students to Reading?—We do at present, because there is no agricultural centre in our county or group of counties.

7764. So that you regard Reading as your agricultural centre?—We do at present, because it is the only one immediately available.

7765. I think you have already told the Committee that some beginning has been made with scholarships, and that this year you had awarded £100 to send scholars to Reading. Is that policy going to be enlarged in future?—We have no available funds for enlarging it at present.

7766. Supposing the Government made a grant, how would the money be allotted? How would you utilise any money that came to you through a grant from the Board of Agriculture?—If there were no conditions attached?

7767. Yes.—I think intermediate agricultural education ought to have a share before we go much further in the direction of scholarships. I think our scheme would be "top heavy" if we gave more scholarships and had no regular system of intermediate education leading up to higher education.

7768. (*By Lord Barnard.*) You are engaged practically in farming yourself on a large scale, I think?—Yes, about 450 acres.

7769. Your views are based upon your own experience?—Yes.

7770. In addition to that I gather from what you have told us about your visits to Holland and to Basing that you take a great interest in the subject, and have done what you can to inform yourself with regard to it, and the different aspects of it?—Yes. I did not spend a very long time on my visit to Holland.

7771. But still you have obtained a good deal of information?—Yes.

(*LORD BARNARD in the Chair.*)

Mr. DRYSDALE TURNER called and examined.

7772. (*By Lord Barnard.*) You have heard the whole of Mr. Swanwick's evidence, and you will no doubt not repeat anything that he has told us except by way of amplifying what he has already said?—I will not.

7773. You are Director of Agricultural Instruction to the Gloucestershire Agricultural Committee of the County Council?—Yes.

7774. How long have you held that post?—For two years.

7775. Would you tell the Committee what you were before that?—I was brought up with the idea of farming our own land in Somersetshire, where we have a farm. After some years' practical experience I took out the Diploma course at Wye, under A. D. Hall, and then for one year I specialised on soils and manures and plant diseases. Afterwards I was for six years with the Cheshire County Council, first at the Agricultural School, Holmes Chapel, which I joined as a junior member of the staff, and at the end of three and a half years I became vice-principal. Then I was appointed peripatetic lecturer, moving about the county lecturing to farmers, and holding classes in secondary schools. After that I went to the Gloucestershire County Council, as lecturer on agriculture and rural economy, and at the end of the first year they appointed me Director to organise the work, and also to lecture in agriculture when required.

7776. To combine the offices of director and lecturer?—Yes.

7777. You wish to give some evidence on the scheme

of agricultural instruction now being carried out in the County of Gloucester?—Yes.

7778. The first item is that of short courses of lectures on rural subjects. Where are those held?—At various centres all over the county.

7779. What is the length of them?—Two to four lectures given one evening a week.

7780. I suppose they are held in schools?—Yes, at convenient centres. The Local Committee has to find a suitable room.

7781. Are they well attended?—Most of them are well attended.

7782. By what class of people?—I am speaking now of all the subjects—agriculture, poultry keeping, horticulture, and so on. Collectively they have been very well attended during the past winter.

7783. I suppose they are attended by the different classes who are interested?—Yes, they are attended by the different classes who are interested—farmers, labourers, and in certain districts like the Forest, by the pitmen, and also by the operatives in the urban districts.

7784. Do you find the audience take an interest in the lectures and ask questions about them when they are over?—Yes, at the end of each lecture we always have a discussion and numerous questions are asked.

7785. Is there anything else you wish to say on that point?—The only thing I wish to say with regard to the short courses in our scheme of agricultural education is, that I consider they are useful in arousing

Mr. B.
Swanwick.

12 June, 1907

Mr. D.
Turner.

Mr. D.
Turner.

12 June, 1907

interest, but that they do not leave a very permanent impression afterwards. I mean to say they open up an interest in the various districts and there the matter ends. In Gloucestershire, it must be remembered, we are not so far forward as regards agricultural education as in some other counties, take Cheshire for instance; and we have had a great deal of prejudice to break down. The short courses have proved of value in rousing up an interest in the work, but in most cases, as I have already said, there is no very permanent mark left.

7786. Might I ask if, in your opinion, this leeway could be made up as it has been in Cheshire and that the County of Gloucester will in due course more and more appreciate the value of agricultural education?—Yes, I think so, and I have noticed a tendency in that direction during the three years I have been there.

7787. Then about the long courses—what are they?—They are in the form of winter classes in the evening especially for young farmers.

7788. How many of those do you hold in a year?—Last winter I had three courses at Berkeley, Laverton, and Charfield. Of course, my time is somewhat limited; I could have arranged for more, but with the time at my disposal I was only able to have three courses—three nights a week.

7789. Were they well attended?—They were very well attended. At Berkeley we had about thirty on the register, and at Laverton an average attendance of twenty. There was a smaller centre at Charfield to which half a dozen young farmers came regularly.

7790. Did they take an interest in it?—Yes, and asked numerous questions.

7791. Have any of them made any remarks to you, subsequently, as to whether they had derived any benefit or as to whether it had opened their minds at all?—Yes, they have asked me to visit their farms, and to discuss certain matters with them, which is about the best sign of the good results of your work that you can have. They have asked me to go round their farms with them and to give them advice on manures, feeding stuffs and other matters affecting their practice.

7792. What was the duration of those courses?—There were 24 classes at Berkeley from October to March; the others I had to cut down to 12.

7793. Those come under the first head—winter classes for young farmers?—Yes.

7794. The second head is "Classes in secondary schools." What do you mean by that?—The classes we have started at Cirencester Grammar School. Cirencester Grammar School is a school largely attended by farmers' sons who come from the Hill district. Some years ago they tried a scheme at the Grammar School with an agricultural side, but it was a failure. When I came into the county I thought there might be an opening for doing some useful work in the secondary schools. We had such classes in Cheshire in the agricultural districts with very good results; and with the object of developing the same kind of work in Gloucestershire, as Mr. Swanwick pointed out, I paid a visit with him to the headmaster of the Grammar School and proposed that we should have a class. He was not very sanguine about it, but he consented to try it as an experiment, and last September we started a class for one hour per week, and we have now increased it to two hours, as it has gone so successfully.

7795. It has gone successfully?—Yes.

7796. It would be very valuable to the Committee if you would inform them what your opinion is as to the future of that experiment—whether you think that is an experiment that could be usefully developed all over the country?—I will go as far as this, that I think it might be usefully developed in other secondary schools in our own county.

7797. Do boys who come to these classes carry out the work in lieu of some other item in the curriculum, or is it an additional subject?—It takes place in the school hours, and they have to sacrifice some other subject, either English or geography; I will not be certain which. Different boys sacrifice different subjects, and they work this in as a special subject.

7798. Do they pay any extra fees for it?—No. I might say with regard to the Hill district we have not had any evening classes for young farmers, and one of my ideas in going to the Grammar School, was that I should catch some of the boys from the Hill district.

7799. You have something to say on the subject of

experimental work?—Yes, that is another branch of our work. We have developed throughout the county experiments at various centres.

7800. By experiments I suppose you mean what we have got rather to differentiate here as demonstrations?—Yes, demonstration plots, I ought to say. Demonstration plots have been set out in various centres throughout the county. In Gloucestershire there is such a variety of soils that it is specially adapted for the purposes of demonstration plots, and we find that they stimulate interest among men who would not otherwise think of coming to a lecture. Supposing there is an experiment on pasture land for instance, they will ask questions about it, and on market days they will come and have a quiet chat with you as to the cause of the poorness of their pastures, and so on.

7801. Have you anything to add to what we have heard this morning from Mr. Swanwick with regard to agricultural scholarships?—Agricultural scholarships give a chance to the cream of the young men who attend these winter classes to take out a complete course at a higher institution. We have two at present, and we hope to be able to give four this year.

7802. I suppose your county adopt the usual formula in the case of secondary schools of saying that such scholarships shall be tenable at any school or college approved by the Council?—Yes—approved of by the Agricultural Committee.

7803. Not limited, of course, to Reading?—No. They give them quite a free field to go wherever they like.

7804. Have you offices in the County Council buildings?—Yes. I have an office at the County Education Offices.

7805. You consider that your office, I suppose, should be used as a bureau of information for the county?—Yes.

7806. Have you a clerk?—I have a part time clerk.

7807. Do you consider that that office might be usefully employed in the way of collecting and disseminating agricultural information generally for the benefit of agriculturists in the county?—I do. I get a number of enquiries coming to me. For instance, a man came to me the other day and said there was something wrong with his oats; he thought they were "rusty," and would I go and have a look at them, and advise him what was wrong. I went over and found that it was not rust at all, but that it was an attack of the frit fly.

7808. If every county had such a bureau I suppose you would agree with me it would be of great advantage?—I think that such bureaux might be usefully developed in other counties for the purpose of giving information on such matters as I mentioned just now. They might also be useful in tracing outbreaks of plant diseases, etc.

7809. Yes.—For instance, we found our bureau useful since the outbreak of American gooseberry mildew. We were told that we had that in Gloucestershire, and we could not find out where it was till we traced it.

7810. Would you approve of all these local offices being linked up together by some kind of central institution in some form or other?—It would certainly facilitate matters.

7811. So as to interchange information and avoid duplication?—It would simplify the machinery for distributing information, and make matters work with greater acceleration.

7812. Now with regard to the dairy school. That is a fixed school, is it not?—In Gloucester it is. It has been running for a number of years. That is the oldest agricultural work we have in the county.

7813. Is it only for girls, or do you take men as well?—We do take men, but it is principally attended by young women.

7814. How are the courses arranged?—Ten classes make a course. We do not take a great number at a time, generally about half a dozen. There are butter-making and cheese-making courses, and farmers' daughters from the Vale district can come up on specified days and take the course to fit in with their farmhouse arrangements at home.

7815. These students come by train, I suppose?—Yes; there is a very good train connection now with the Vale district.

7816. Will you now tell us about the Cider Institute at Long Ashton?—That has aroused a good deal of interest in the county. We generally have a number of people to visit it each autumn, including many farmers. This spring we had a large party who went to taste the cider

that had been made. Most of the cider makers also take an interest in it.

7817. Is there much cider made in the County of Gloucester?—Yes, in the Vale, not on the Hills. It is quite an industry.

7818. There is therefore scope for a great deal of useful work in that direction?—Yes, for useful information to be obtained and disseminated.

7819. Are you associated with the work of the Bath and West?—We give a grant towards the Cider Institute, so that we are one of the contributing counties.

7820. (*By Mr. Latham.*) The Cider Institute is not under the County Council, is it?—No there are five contributing counties, and the Board of Agriculture also makes a grant. The Cider Institute is a limited company.

7821. (*By Lord Barnard.*) That is practically all you have to say upon the existing facilities for agricultural instruction in the county?—Yes.

7822. Now you wish to draw the attention of the Committee to what you consider are the weak points in the present system?—Yes.

7823. The first item you put down here is "Short courses leave little permanent impression." I think you have a ready referred to that?—Yes, I have touched upon that already.

7824. Then the next item: "The variation in attainments between the farmer's son who has attended a secondary school, and the young labourer who has left the elementary school a longer or shorter period"?—In starting a winter class you get these young farmers and labourers, and they are all of different calibre, as regards intellectual attainments, and there is a certain amount of time wasted in going over elementary work to bring them into line before you can instil into them some of this technical work. For instance, if you are going into the question of manures it might be necessary to touch on the unitary method, and to put in a little instruction of that kind. There is a variation in the intellectual capacity of the students, and we find it rather a nuisance in starting these courses. At Berkeley they are more advanced, but in some of the other parts of the county where I take evening classes it acts as a sort of drag on the amount of work you can get through in the winter.

7825. I do not know whether you can suggest how that should be got over?—I have touched on that in the scheme for continuous evening school classes to be considered later.

7826. Then there is a need of continuous courses and a centre to work to?—Yes. In going about to these evening classes I have to go all over the county. We have not got any fixed centre equipped with proper apparatus. What apparatus I require I have to take with me, and it would be advantageous to the work if we had a centre of this sort in Gloucester itself, with specimens and apparatus, where you could get the young men to come up to from the Vale and elsewhere.

7827. With regard to facilities in the County of Gloucestershire for higher agricultural instruction, they are more or less defective at present?—They are at present, but of course the work has not been developed very long.

7828. I do not know whether you can give us any information with regard to classes for elementary school teachers?—We have not done anything in that direction

up to the present, but I have been talking over the matter with our Secretary of Education lately to see if we could not do something next winter, but so far we have not touched it at all.

7829. Are you of opinion that it would be desirable that all elementary school teachers who are to work in rural districts should have some instruction in rural subjects, and that it should form part of their curriculum?—Yes, if they have a desire for it.

7830. You do not think it should be compulsory?—I do not think they ought to be forced into it. If they have a liking for it I think there should be facilities offered to them to acquire a knowledge of these subjects.

7831. I am rather speaking of the training of the prospective elementary school teacher?—I think it would be a good thing to have definite courses for them. The man who was going to be a rural teacher would then have to specialise as against the man who was going to be a town teacher.

7832. That would be a difficulty, would it not, because some teachers no doubt at some time or another might wish to change from one to the other?—In taking up his course the prospective teacher would have to select at first which branch he was going into, but if he wished to change afterwards his training in rural subjects would not debar him from teaching in the towns. He would have to specialise at first at any rate in order to get his diploma for rural teaching. But a course in rural subjects, however, I do not think would hurt the town teacher as it would develop the mind, by training him to observe and think for himself.

7833. You are of opinion that you ought to have a winter school of agriculture?—I think that would be the best immediate development, and that we are now prepared to take a step in the formation of a permanent centre.

7834. What is your opinion as to how the finance for such a centre should be provided?—Of course at present we are working with very limited means. Mr. Swanwick has already touched upon that matter. If it is made a national question, then we should ask for a grant from the Treasury, perhaps to come through the Board of Agriculture subject to their inspection and recommendations.

7835. Such a school would be a development, then, of the bureau of information which you referred to?—Yes.

7836. As well as having for its object the instruction of lads and lasses?—Yes, we could combine the two.

7837. You think the whole work of giving information to farmers and obtaining information for them goes hand in hand?—I have found it so in Gloucester.

7838. You also think it desirable that there should be an arrangement for permanent trial grounds to be instituted at certain centres typical of the farming of the county?—Yes. We are not perhaps sufficiently developed to institute a college straight away with a farm school attached. No doubt if we had the resources and the means a college with a farm school would be desirable, but at present I think an arrangement for permanent trial grounds at various centres on the different soils of the county would be the best way of continuing the work.

7839. We have a witness here who has come specially and whose time is very limited, and we should like if you would allow us to interpose him now and complete your evidence a little later?—Certainly.

*Mr. D.
Turner.*

12 June. 1907

(Lord REAY in the Chair.)

The Rt. Hon. Lord FITZMAURICE, called and examined.

7840. (*By the Chairman.*) You are prepared to give the Committee some information with regard to agricultural education in Wiltshire?—I am. I understand the Committee thought that it might be of use if I were to state briefly how the agricultural education work is done in Wiltshire and the origin of those arrangements. It is chiefly in regard to their origin, upon which I think my evidence might be of use rather than in regard to the actual education itself. I rather feel if I went further that I should be trespassing upon the province of the Chairman of the Committee, Mr. Phipps, who is an admitted authority in my county. I understand that

there is a reasonable chance of his giving evidence here, so that I would ask the permission of the Committee to confine myself to the manner in which this work is done and how it commenced. It began originally under the old Technical Instruction Acts. I was at that time Vice-Chairman of the County Council, and with the support of the late Marquis of Bath, the Chairman, whom I succeeded in 1896, I proposed on the 10th May, 1893, that a separate Agricultural Education Committee should be formed to take off the hands of the Technical Education Committee all or any work connected with agriculture. I was supported by several leading tenant farmers,

*Lord
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7840a

Lord
Fitzmaurice.
12 June, 1907

both on the Council and outside, but there was very far from unanimity, and the first attempt, although my second was a large and influential farmer in South Wiltshire was defeated. Up to that time I ought to say the work had been done by a small sub-committee of the General Education Committee. I returned to the charge on January 25th, 1895, and I was successful. The recommendation of the Committee was approved by the County Council on August 6th of the same year, and that arrangement continued during the whole period when the education was worked under the old Technical Instruction Acts. Wiltshire was the first county to appoint an entirely separate Agricultural Education Committee, but very shortly afterwards (I have not got the exact date) the County of Somerset followed our example. There was established in those years most of the things which are working now—a butter school, which is still in existence and has gone on ever since; a cheese school working for some time, but temporarily abandoned; a farriery school, which still goes on, and itinerant instruction in poultry and gardening, all of which go on. Certain scholarships were founded tenable at the Dauntsey Grammar School, and the County Council, on the recommendation of the Agricultural Committee, voted £1,000 in aid of the Dauntsey School, in order to establish chemical laboratories as well as founding the scholarships. The County Council, also on the recommendation of the Committee, gave a grant of £100 a year on maintenance account to the Dauntsey School, which has continued ever since. That was the state of things when the discussions on the Bill of 1902 commenced. When the celebrated Clause 17 as it now stands in the Bill came to be considered, it appeared that it would be in the power of a County Council if the Bill passed to establish two Committees, and therefore to maintain the system which had been established in Wiltshire. There was, however, some doubt about it in the minds of legal authorities, and I therefore exerted myself in the House, and I received very valuable support from Mr. Henry Hobhouse, to make it perfectly clear in the Committee stages of the Bill that that arrangement could be made; that is to say, that we should be able to continue our Agricultural Committee as a separate body with a separate grant out of the higher education funds. In that, especially as the Government were friendly and stated that that was what had been their intention, I was successful, and the Bill passed in the shape in which it now stands. Our Agricultural Education Committee was reappointed and received a delegation under the opening words of Section 17 of the Act to do everything in the county connected with agricultural education except some rather humble attempts we had made to teach gardening and things of the kind in the primary schools. That, in the opinion of the Director of Education was best left, owing to its very elementary character, under the General Education Committee. The funds of the Committee are but small. I had hoped to have brought the exact figures here with me, but I am sorry to say some papers that I expected to receive this morning have not reached me, and if the Committee will allow me I will fill in the figure afterwards or Mr. Phipps can give them. There is naturally a constant tendency to struggle over the amount between the Agricultural Education Committee and the General Education Committee, and the Finance Committee of the County Council has nearly every year to act as a sort of arbitrator. I am bound to tell the Committee that the position gets more delicate every year, because as the work of each Committee increases, and the “whisky” money has fallen off also the county has been obliged to levy for the last three years a higher education rate. Under those circumstances each Committee is very anxious indeed to establish its claim to a full share of those sums, especially to the sums arising out of the county rate, which many of the farmers, who are naturally an influential body on the Agricultural Committee, claim ought to be a sort of happy hunting ground of their own. They take more interest in agricultural education than in other education, and they claim that they are the largest ratepayers in the county, and that payments should be made out of the rate money for agricultural education. I do not view these claims with any disfavour because it is an immense thing that the Agricultural Committee has really interested many people in Wiltshire who before were not interested or even friendly to education. At first this Agricultural Committee was a little laughed at and sneered at, and as I have said the first time I brought it forward I was defeated, and defeated by the votes largely of agriculturists. Some three years ago when there was a great cry of economy in the administration of the county, and the economist party cast about to see what

they thought they could attack with the greatest chance of success, they made a set under rather powerful leadership upon this vote for the Agricultural Committee. They raised up some amount of feeling among the agriculturists in South Wiltshire, who, doubtless, do not benefit as much from this expenditure as the rest of the county. They do not benefit so much in this way, that the farmers there are very large farmers, large sheep farmers, and very large holders of land. The butter school, for example, does not interest them so much as it does the smaller men in the rest of the county, and they became parties to this attempt to economise this expenditure and to throw it into the general revenue of the county so as to reduce the rate, as it would have, but by not I think more than ½d. in the £, which was one of the things pointed out to them. However, the attack was a complete failure. The Committee courted discussion both in the County Council and outside, and an influential and leading Conservative paper, *The Devizes and Wiltshire Gazette*, which is always written with great impartiality on all questions of County Council government and finance (being on the other side, I am very glad to have the opportunity of saying it), sent out a circular to a large number of agriculturists in all parts of the county. The replies, though they were not absolutely unanimous, were quite overwhelming that the work of the Committee was useful to the agriculturists, and was increasing year by year in utility and in the hold it had on the popular mind. The result was that since then, although the economists at this moment are engaged in attacking other branches of expenditure which they think they can reduce, they have entirely abandoned the attack on the Agricultural Committee, and I feel that the Agricultural Committee is now perfectly safe from further attack. I say that subject to one observation and that is that being a branch of higher education it is involved in the common danger and in the same difficulties which all higher education is now involved in by the continued growth of the elementary education rate. The elementary education rate is going up by leaps and bounds in most counties in the South of England, and the ratepayer has no doubt got very sore on the subject, and that being so he is, if I may use the expression without being misunderstood, like a bear with a sore head, and he looks round to see where he can get something to reduce. He is very much inclined to rush blindly at the higher education rate generally. We had an instance of that this very year in Wiltshire. There was a proposal made to resist the levy of a higher education rate altogether, and when we pointed out that if they abolished the higher education rate they would amongst other things entirely disorganise the work of the Agricultural Education Committee, they disclaimed any wish to do that, but they said the Agricultural Education Committee could very well keep itself going by the grants from the “whisky money.” They said, “What we want to reduce is the expenditure upon the secondary schools and everything of that kind, at least as long as the elementary education rate goes on increasing by leaps and bounds.” I am not inclined to think that we are free from danger as long as the elementary education rate keeps up its present high level, and continues to increase during the next one or two years, until the salaries of the elementary schoolmasters have reached what may be called summit level under the new scale which the County Councils are adopting. That is the present position of the Education Committee. I may add in addition that although we were told at one time that we were violating the law we have succeeded to a certain extent in turning this Agricultural Education Committee into a general agricultural committee. Our legal advisers have pointed out to us from time to time that we are running rather dangerously near violating the law, because the money is allocated by law to education, and it is not always made clear that it is expended in education—for example, giving prizes at the shows and other branches of work of that kind. We have got over some difficulties by an arrangement under which the same persons who have been appointed on the Agricultural Education Committee by the County Council, with the exception of the co-opted members—the additional members as they are now called—are re-appointed to be the County Council Committee for such purposes as the Fertilisers and Feeding Stuffs Act and matters of that kind. The Committee first of all meets as an Agricultural Education Committee and does that work, and then if there are any of the co-opted members present, they either leave or remain in the room to listen to the discussion if they care to, and the Committee then sits as the Fertilisers and Feeding Stuffs Committee. I was talking to Lord Fortescue the other day about it. He enquired on

behalf of his County Council what we were doing, as to how far it would be possible to carry that organisation a little further, and whether it would not be a desirable thing if we could not get some statutory organisation by which one Committee could take agricultural education, the Fertilisers and Feeding Stuffs Act, and the Cattle Plague Regulations and that sort of thing, so that one Committee of the county could be looked upon by the farmers as their Committee. We have taken the first step in that direction as I have described with regard to the Fertilisers and Feeding Stuffs Act; and it has worked very well. That is the present state of things, and, of course, if I can answer any further questions I shall be very glad to do so.

7841. You are of opinion that a separate Agricultural Committee has a great advantage over an Agricultural Committee which is a Sub-Committee?—Judged by our experience in Wiltshire I think so certainly, for the reasons I have given that it brings into line a great number of persons who otherwise I think have no special interest in education.

7842. Are any farmers on the General Education Committee?—Yes, but naturally they prefer being on the Agricultural Committee.

7843. You have no difficulty in getting farmers to serve on the Agricultural Committee?—No, no difficulty at all now.

7844. Have you reduced the grant in recent years for agricultural education—after the Act of 1902, for instance?—I have not, I am afraid, brought the figures with me, but I could easily put them in, and I would ask permission to do so or Mr. Phipps will give them. The grant for agricultural education during the last two years has increased. The Agricultural Committee tried very hard both last year and this to get a substantial increase, and they got a small increase. They would have got a larger increase, but it became clear that something must be given up, and the General Education Committee did not wish to give up certain things, in order to find more money for the Agricultural Committee. The only thing that was given up a few years ago voluntarily—it was considered better to give it up on the merits temporarily—was the cheese school. There has been a great change in regard to the making of cheese, as no doubt many members of the Committee are aware. The old North Wiltshire cheese, which used to be a staple article of produce in the whole of the northern part of the county, I am sorry to say is now going out. When the cheese school was first set going we had a Cheddar cheese school and a Wiltshire school. The Cheddar cheese school was more successful, and it went on for some years, but when it was found necessary to make reductions the authorities in the county thought it would be as well to give up the cheese school, at least temporarily, because they thought it had done its work for the time, and that it could, if it was found necessary, be taken up again a few years hence. So far as I remember we were able at that time to extend work which we had not originally begun with in the way of hedging and ditching and thatching, which proved to be very largely appreciated.

7845. I suppose one reason for the decline in the making of cheese is that farmers have found perhaps a more profitable market for the disposal of their milk?—Yes, they send the milk up to London. I may say that I was at the County Show the other day where there was a very large exhibit of cheese, and I noticed that there was very little North Wiltshire cheese indeed shown.

7846. Are you satisfied with the way in which the grants are given by the Board of Agriculture and the Board of Education?—The amount of grant which comes directly to the Agricultural Education Committee is exceedingly small, and that is one of the reasons why, a rate having been levied, the farmers not unnaturally say they ought to get a fairly large slice out of the rate for Agricultural Education because so very little can go to it from the “whisky money.” The “whisky money” is nearly all allocated to strictly educational things, such as secondary schools and technical classes and things of that kind.

7847. Do you think the Board of Agriculture should be in a position to give grants to the various Agricultural Committees?—I would be very glad to see it, but if I am asked my own general opinion as to what I believe would really help all branches of higher education, including agricultural education more than anything, it would be if something could be done to reduce the high level, and therefore the unpopularity of the elementary education rate, because, as I said just now, the ratepayers in the rural districts are

in a very sore state about this high rate, and the result is that they want to economise everywhere else. If you could get the elementary education rate down, say, 3d. or 4d. in the £, I believe one half of the difficulties we have had during the last three or four years in regard to collecting money for higher education and for agricultural education would disappear. The ratepayer is, as I ventured to use the expression before, like a bear with a sore head; he is angry and he casts about to see where he can get the rates down somehow or other. I had one man after the other telling me the other day that they were not voting against higher education, but what they were voting against was the elementary education rate. I told them I thought it was very foolish of them, but that is what they said, and they appeared to be perfectly genuine.

7848. (By Lord Barnard.) Could you tell us whether this Committee that you mentioned acts as the Executive Committee under the Diseases of Animals Act?—No, I wish I could. The Clerk of my Council, who is a trained lawyer, has always seen very technical difficulties in doing it, and Lord Fortescue, who came to me the other day to get this information, put the same question. He seemed to be trying to get over these difficulties, so as to endeavour in Devonshire, which is his county, to make the Committee representative of all branches of agriculture. I also noticed the other day in the Agricultural Committee that the present Marquis of Bath expressed a strong opinion that the Committee was constantly hampered by the fact that being an Education Committee it had always to be looking at the Acts of Parliament to ascertain whether it was not breaking the law by doing something that was not strictly within the letter of agricultural education.

7849. I gather with your great experience of local government, and particularly County Council work, that it is your opinion that agricultural education work (especially that part which has to be done through the intervention of a Government Department such as the Board of Agriculture) might with advantage be in the hands of one committee in the case of the whole of the county?—That is my decided opinion, and one reason for it is this, that anyone who has to do with County Council work knows the great difficulty in connection with it is in the large distances which members of the Council have to travel in order to attend the Committees. If you could get a sufficiently long agenda to make it worth the while, by concentration of the work, of the members to come, they would be inclined to attend regularly. Very many of the members travel considerable distances to do work which might be done in an hour or an hour and a half. The Committees never last very long, and I am of opinion that if there were more concentration and members of the Council, instead of being brought one day to attend a Committee on the Diseases of Animals, and another day on the Agricultural Education Committee, another on the Fertilisers and Feeding Stuffs Act Committee could have all that on the agenda of one Committee it would make it worth while for people to come.

7850. If I may venture to say so, I am very strongly of the same opinion. You do not have any grant from the Board of Agriculture?—No, there is no direct grant.

7851. You have no field experiments or any farm in your county?—You may call these hedging and ditching and thatching field experiments.

7852. But no manurial experiments?—I think there is something of that kind going on now, and there was formerly, with potato cultivation and so on. I am not a practical agriculturist, and perhaps Mr. Phipps will be able to tell you about this with much greater authority and knowledge than I can.

7853. One of the witnesses that we have had before us has told us that in his opinion there should be an authority which should not only have the charge of agricultural education, but should become a bureau for the collection and dissemination of scientific information, that is for the benefit of grown farmers as well as lads—I suppose your opinion would be that this Committee could undertake that, too?—Yes, I think it could. Some years ago I remember Mr. Story Maskelyne (a very great scientific authority, and also a landowner and agriculturist, and who really was in some ways the father of the work of this Committee), in conversation, pointed out how advantageous it would be if ultimately we could in some way or other tack on what in America would be called an observation station to the Dauntsey school. I hold that the Dauntsey School, with the help it gets from the county, ought to have a very great future before it. Our finances are rather hampered, because we have a large loan

Lord
Fitzmaurice
12 June, 1907

Lord
Fitzmaurice.
12 June, 1907

to pay off, but we are on a very sound financial basis, and if the Mercers' Company, who are the real founders of the Dauntsey School, continue to take an interest in it, and give a larger support to it still, and the County Council do the same, I hope that at Lavington we might found a very desirable observation station connected with the School.

7854. (*By Mr. Lamont.*) As a County Councillor I should like to ask you one question. I think you said that you thought it would be desirable if the Committees of the County Council on Agricultural Education and the Fertilisers and Feeding Stuffs, and on the Diseases of Animals Acts, could be amalgamated and worked together, so as to make a rather longer and certainly more interesting agenda?—Yes.

7855. I suppose you would be willing that the Small Holdings Committee should also be joined?—Certainly. The difficulty is only a technical one, that is, the difficulty with the co-opted members, and we have got over that in the way I have described. The Act of Parliament says there shall be a separate Committee, and we have to go through the rigmarole of appointing the Committees over again. We always take exactly the same people, but it means that I have to put two motions from the chair.

7856. Legislation would be necessary to enable the same Committee to be appointed for these various purposes?—Yes, and it would require some careful drafting, because there are a lot of legal pitfalls, and you have to be very careful in a matter of that kind, because naturally the Clerk of the Council is rather nervous for the time being, and it is right that he should be so, because he does not want to involve the Council in expenditure which the auditor would disallow the next year as not being within the purview of the Committee. We are kept in very tight order by the auditors, and we always live in fear.

7857. You would agree, if this were possible, not only would there be an inducement for men who are interested in the various branches of agriculture to belong to the County Council, but also to attend the meetings regularly and give their time to the Committee?—Yes, I quite think that. With the Diseases of Animals Committee, for instance, it would be an additional advantage, for this reason, that under the archaic Acts of Parliament under which that Committee is formed, it is a rather unmanageable Committee in size, and you would get a more concise and compact Committee if the other method were adopted.

7858. (*By Mr. Latham.*) I cannot quite agree with you about the appointment of the Committees not being made annually. Of course you know men die, and we get square men in round holes and so on, and men who wish to retire, and I think it is highly desirable that these Committees should be appointed annually?—I did not say otherwise.

7859. I thought you said they ought to be appointed permanently?—No, I did not say that.

7860. With regard to your remarks as to elementary education, I suppose everyone will agree with you that it is absolutely essential to get some relief as regards elementary

education?—It would be rather dangerous perhaps for me to express an opinion. I have perhaps gone rather far in expressing my opinions already.

7861. You do not wonder that it is a sore question with the ratepayer?—No, I do not wonder at it. I have always expressed the opinion that a larger portion of the elementary education rate ought to be placed upon the Exchequer. No doubt the members of the Committee are aware the present system is one which bears peculiarly hard upon progressive counties. Some counties, most, not all, have put their teachers upon a regular scale, and they will all have to do it eventually, because a county that does not put its teachers on a scale naturally runs a risk, almost a certainty, of all the good teachers in the county going off to some other place where there is a scale of good salaries. The counties which started first with a reasonable scale, and those which have paid their teachers if not on a liberal on a well-considered scale have suffered most.

7862. Do you not think it would be a better system to have a uniform scale?—Yes. But you know how it began. The great County Boroughs, who were very rich compared with agricultural counties, started it, some people thought with very high scales, and the Act of 1902 had not been in operation a year before one began to hear of teachers looking wistfully over the border into the County Boroughs and wishing to go away and obtain posts there.

7863. May I take it that the system you advocate with regard to the Committees would divide the Council into about two or three important bodies?—I do not think it would go very much beyond concentrating the work of the Committees, the names of which have been mentioned, that is to say, the Agricultural Education Committee, the Fertilisers and Feeding Stuffs, the Contagious Diseases of Animals, and the Allotments and Small Holdings.

7864. You would have a division between Education Committees and Committees dealing with roads, bridges, and so on?—Yes, I would leave it as it is.

7865. And then have one large Committee to take up these other several matters?—Yes.

7866. Do you think that would work?—I think so; it would not be such a very large committee.

7867. I am afraid we should lose some of the best men on some of the committees which we want on almost all of them?—Yes. The work of the County Councils is increasing very largely, and as Lord St. Aldwyn said in the House last year in the debate on the Education Bill, only those who were concerned in County Council work knew or fully appreciated how great and how constantly increasing the work thrown upon County Councils was.

7868. Lastly, we may come to the conclusion, from your evidence, that you would like to see a rural party and an urban party with regard to County Council work?—No, I do not put it in that way. I think it is a very important thing to have a Committee specially for the education in which the rural mind is particularly interested.

(*LORD MORETON in the Chair.*)

Mr. DRYSDALE TURNER, recalled and further examined.

Mr. D.
Turner.

7869. (*By Lord Moreton.*) Would you continue your evidence from the point at which you left off?—I was referring to the institution of permanent trial grounds at certain centres in the county in conjunction with a winter school as the best way of continuing the work. I should suggest permanent trial grounds, perhaps one in the Vale, and another on the Hills. We have no permanent hold on the farms we are now experimenting on, we are only permitted there by courtesy, but if we had a ground of our own for which some grant was made, we should then be in a position to carry out continuous trials. For instance, there is a great deal of poor pasture land in Gloucestershire. At the present time I am conducting a series of experiments with manures on pastures, but I am beginning to feel the need of more permanent experiments such as the Tree Field experiments at Cockle Park or experiments similar to those which Professor Middleton has carried out at Cambridge. You require for that purpose permanent ground with which you can do more or less as you like. If we had such a trial ground we might also have a model

orchard, where demonstrations on planting, pruning and so forth could be carried out.

7870. I am right in saying, am I not, that in the county of Gloucester there is a good deal of other fruit grown beside the apple?—Yes, there is a good deal of dessert and marketable fruit grown of various descriptions.

7871. In speaking of "orchard," you are rather confining yourself to the apple production for cider?—I am referring to both marketable fruit and the apple for cider.

7872. At the same time, there is a lot of other fruit grown in the forest?—In the forest there is a certain amount of bush fruit grown.

7873. Also plums and prunes, and so on?—Yes.

7874. There is a big fruit district in the North?—Yes, on the Worcestershire border there is a large amount of fruit grown.

7875. I would like you to give us your definition of "orchard"?—An orchard is an enclosure of standard

fruit trees attached to a farm with grass below. By the term "plantation" I refer to fruit trees with arable cultivation beneath, and in some cases bush fruit.

LORD BARNARD in the Chair.

7876. (*By Lord Barnard.*) You have not any class for forestry, have you?—We have not developed forestry at all, but if we had a permanent trial ground it would give us an opportunity of doing something in that direction.

7877. I see in the Board of Agriculture returns there is a large amount of forest land in Gloucestershire?—Yes, there is a large amount of woodland.

7878. There are 61,000 acres of forest, are there not?—The Vale is very well wooded, and there is the Forest of Dean of over 50,000 acres, but of course the Cotswold Hills are rather bare, except for beech trees and fir plantations.

7879. Is that all you have to say on the subject of permanent trial grounds?—Yes.

7880. The next item you have is about the development of continuous evening school classes in villages for labourers' and small farmers' sons, leading up to technical courses and classes in manual instruction suitable to the requirements of the district?—I want to draw a distinction there with regard to the educational requirements of the rising generation. The difference in the capacity between the farmer's son who has attended a secondary school and the labourer's son, or the small farmer's son who has come from an elementary school and perhaps been away from school for two, three, four, or more years before he thinks it is worth his while to take up evening classes is very great. You have got thus two different stamps of young men to deal with, and in any scheme you have to take that into consideration, and it is a very important point. Up to the present they have been rather classified together. That leads up to the question of continuous evening school classes. This is a point which Mr. Household will touch upon further after my evidence is finished. Our Agricultural Committee has taken the matter in hand and there is a scheme for two trial evening school courses, with the object of inducing a lad on leaving the elementary school to take out a course at once in the evening school, so that there will be no break in the continuity of the link. In that way you prepare their minds for any technical instruction you wish to give them afterwards.

7881. Do you really think you can do very much good in the educating of farmers' sons at these village classes in the evening. I can understand it in regard to labourers' sons, but I confess that I do not see that you can do much for the farmers' sons?—If you take a class such as we have had at Berkeley principally attended by farmers' sons the conditions then are different.

7882. You admitted that the circumstances at Berkeley are exceptional?—That leads to another question, namely, that to develop any of these things you must have local support—you must have somebody who is interested locally. I do not care what class of lectures you are taking up in this work, you must have a certain amount of local support. If the people are poking fun at the thing locally, it tends to destroy the interest.

7883. You want to go further than that—not merely to get people who will not poke fun at it or get people who only take a negative attitude—you want to get people who will take up a positive attitude with regard to it?—Yes, who will take a real interest in it.

7884. Yes.—That is what we have at Berkeley and at Laverton too; there are people at both these places who push the thing forward, people who have the interests of the rising generation at heart.

7885. Do you really think you can do anything for the farmer's son at these village classes in the evening?—We are trying it as an experiment at present, and I believe they will be found useful for the son of the smaller farmer.

7886. I think your experiment in this direction is rather weak, is it not?—Well, it is really branching out in a new direction.

7887. In other cases it is usually considered necessary to have a sort of farm school for farmers' sons, or to give them a course at a university college?—With our classes for young farmers and these evening-school courses we hope to work up to that in the future. In our present state of development we think that these village courses will lead in the right direction.

7888. Is that all you have to say on this subject?—Yes.

7889. I think we have covered the ground with regard to scholarships more than once?—Yes; Mr. Swanwick referred to it, and I also touched on it this morning.

7890. Then you have something to say as to the development in the future of a college for a group of counties. Looking at the map there, what is your idea on that subject? First let me ask you, again looking at the map, whether you are familiar, as I have no doubt you are, with all these agricultural institutions of different types?—Yes, I am familiar with most of them. I know Wye and Holmes Chapel, having been in close touch with them; also Cambridge and the college at Leeds.

7891. With the exception of voluntary institutions, there is nothing in the way of a public agricultural institution for the purposes of agricultural education in your county and those adjoining?—No, not in any way in touch with the farmers.

7892. You think you should have some such institution in Gloucestershire?—I think our system of agricultural education should lead up to that, and that we ought to have an eye to the establishment of such an institution during the next few years.

7893. Having regard to the number of institutions of this character which already exist, do you not think it would be a good plan to give a scholarship to likely boys which would cover their travelling and other fees, and enable them to go to these existing institutions?—That is what we are doing at present and it covers our immediate requirements. I have a scheme, however, set out in this paper before me—a scheme for the development in the future of a college for a group of counties.

7894. You know something about Bristol College, I daresay?—Yes.

7895. You know the position of Bristol College, and that they are contemplating extending their operations by means of a charter, or in some such way?—So I have heard.

7896. We understood from the witness who came here that it is more a college for the City of Bristol than anything else?—Yes; it has been developed up to the present more on those lines.

7897. I think he said they did not contemplate the development of actual agricultural teaching, but that it would be more in the way of research work?—Yes, so I understand, that it will be more in the nature of higher research work, like they contemplate doing at Birmingham.

7898. So that Bristol College would not serve the purpose you have in view?—Upon the present suggestions, it would not serve the need of a farm school or be in any way a practical school for farmers' sons.

7899. You are in favour of the formation of agricultural clubs for village lads?—Yes.

7900. Will you tell us what that refers to?—In connection with the evening classes to arouse the interest of the boys in rural subjects who are leaving the elementary schools by getting them to form small agricultural clubs. We have not done anything of the sort up to the present, but I think something in that direction might very usefully be developed so as to enlist their sympathy in these matters.

7901. Do you think you could sustain their interest when you had got it?—That would depend largely upon your schoolmaster, and upon the local support and local interest.

7902. Things are very different in Gloucester from what they are in the county of Durham, if you could maintain their interest in any organised institution of that character for any length of time?—Of course it would be a small thing to start with. As I say, it depends principally upon how much the schoolmaster is interested in the subject of nature study, and where the schoolmaster is interested in it I think it would be possible to develop something of a useful character, it would be more a local thing than a county thing.

7903. Your last suggestion as to how your present scheme might be developed and improved is by an annual grant from the Board of Agriculture, and by inspection by experts and assistance by advice. Perhaps you had better develop that yourself—I do not quite understand the meaning of it?—Of course the drawback at the present time to providing a permanent school or anything of the kind is the lack of funds. That is a matter that was touched on this morning. If anything is to be further developed, it is necessary that a grant should come from somewhere, and if certain sums from the Treasury were

*Mr. D.
Turner.*

12 June, 1907

Mr. D.
Turner.

12 June, 1907

earmarked for this purpose we might get a grant through the Board of Agriculture, and in that case the work, I take it, would be supervised by their inspectors, who would come down and advise us as far as the agricultural work is concerned. We have been subject to their visits in the past, and the advice we have received I have found personally to be very helpful. The inspectors see the work that is carried out in other counties, and they are able sometimes to give one useful suggestions.

7904. Do you really mean, if you could start an institution of the kind you mentioned, you would apply to the Board of Agriculture to put it on the list of institutions which they already aid, or that you would like some grant without such an institution, to develop the work you are carrying on?—The grant we ask for is to help to develop and improve the work we are now carrying on; I do not see how we can do it without it in the future if our work is to be extended in the right directions.

7905. Do you happen to know by chance as to the history of the grant which was made by the Government a few years ago for assistance in instruction in forestry and the result of the report of the Departmental Committee which inquired into that subject?—No, I cannot say that I do; I do not know the whole history of that.

7906. Not the whole history, but you are aware, I suppose, that it is a small grant, only £500 a year the total sum, and of the very great difficulty there was in getting it. I do not know whether you realise that getting grants from Government, and particularly substantial grants, is a very difficult matter, and that in order to justify such a grant you have to make out a very very strong case, and I would ask you what is the special case you would put forward on behalf of Gloucestershire in asking for such a grant?—That we are at present greatly in need of funds to help us to form some central institution by means of which we may develop our work to the best advantage on the lines we are now proceeding. Another point in which we are very greatly handicapped is with regard to our limited staff. As I mentioned this morning, I am not only organising the work, but I am engaged in teaching the agriculture, and one man to do all that work for a county cannot develop it very far or very quickly.

7907. What I mean is, you would have to make out a case and have to show that things are positively suffering from the want of this money, not from a purely theoretical point of view but from a practical agricultural point of view. It is very easy to ask for grants, but the Government will never entertain it unless a very strong case is made out?—Of course one could put the thing into a different form and show how it is utterly impossible to link up the various forms of rural education in Gloucestershire, and to train the rising generation so as to develop the agricultural resources of the county to their fullest extent unless we obtain fuller financial aid from some source. We have only £1,500 a year at present for Agriculture, and with that we could not develop that work at all on the line I have suggested.

7908. The scholarships are given by the county independent of the grant that is given for higher education, surely?—Yes, a certain sum is now raised locally out of the rates for the purpose.

7909. Does the County Council of Gloucester afford a boy who wants to get higher agricultural instruction any facility for doing so?—At the present time they afford him the facility of evening classes, and from those, if he is sufficiently intelligent, he can go on to any of the agricultural schools. There are two scholarships of £50 a year, and we have two students at present taking out their courses at Reading.

7910. Supposing you happened to have three, the third boy would be debarred because there are no facilities for more than two?—We have applied to the Board of Education to supplement the grant for the scholarships on the ground of their offer of local science and art exhibitions, and they have satisfied us that they will, so that we hope to grant four scholarships for that purpose in the near future.

7911. The county do not give you facilities?—No.

7912. They give some higher education scholarships. I suppose?—Yes—the details of which I cannot tell you.

7913. I suppose those would not be closed to agriculturists?—It all depends, the majority of them would be of little use to agriculturists.

7914. You have some experience of Cheshire, as you have told us. Do you think the facilities in Gloucestershire are equal to what they are in Cheshire?—As a matter of fact, there is a larger proportion of the

population engaged in agriculture in Gloucestershire than in Cheshire, but in Cheshire they have been brought more into touch with the business habits of manufacturing districts; and they are consequently more advanced in their ideas.

7915. You have not exactly answered my question. You say there is a larger proportion of agriculturists, but you have not told me whether there are equal facilities in Gloucestershire to what there are in Cheshire?—No, the facilities are not the same in Gloucestershire. What the Cheshire Council have already done for their rising agricultural generation is to provide a school at Holmes Chapel for lads, and a dairy school at Worleston for girls, and at present we have not got the same facilities, but we hope to develop them.

7916. You have no properly equipped centre, as you have already explained, and you have also told us that you have not a sufficient staff?—No.

7917. You have told us further, of the insufficiency of your funds. I do not think anything further arises?—No.

7918. (*By Lord Moreton.*) Some members of the Committee do not perhaps know the county of Gloucester as well as you and I do. May I ask your opinion, therefore, as to whether it is not an exceptionally difficult county to work on account of its geographical sub-division. It is practically divided into vale and forest and hill. Does not that add a great deal to the variety of the work and to the difficulty of the work?—It certainly makes a difficulty because the farmers who live on the Hills are quite distinct from those who live in the Vale, and the land and the methods of farming are quite different. The big farmer on the Hills is a different type of man to his neighbour in the Vale, and in the Forest you have a different class of population again; there are three distinct types of population.

7919. And two distinct types of farmer?—Two distinct types of farmer. That was really the point in my suggestion with regard to having trial grounds at different centres, so that you could deal with the farming that was typical of each district.

7920. Would you tell me why the numbers who attended the lectures at Berkeley are apparently so very much larger than those who attended the lectures at Charfield. I know both localities exceedingly well?—At Berkeley, we are working in conjunction with the Berkeley Hunt Agricultural Society. It is supported, therefore, by a strong local organisation; there is further the inducement of Lord Fitzhardinge's prize in connection with their Hunt Show, and also Mr. Peter Lord Fitzhardinge's agent, takes a great personal interest in the class, and encourages the young men to attend.

7921. With regard to the classes at Laverton, are they on the same lines more or less as those at Berkeley?—Yes, they are more or less on the same lines. At Laverton there are several young labourers as well as young farmers.

7922. Is that why you lay yourself out to catch the young labourer at Laverton more than you do in the Vale, or is there some other reason?—There are several small farms round there for one thing, and also at Laverton the local interest draws them off one particular estate.

7923. Laverton is near Toddington, is it not?—Yes.

7924. Is it in the vale or on the hills?—It is just down at the foot of the hills between Toddington and Broadway.

7925. There you succeed in getting young labourers?—Yes; a mixture of young labourers and young farmers.

7926. You find the same course of lectures attract both?—Yes, although it has to be more of an elementary nature than the teaching at Berkeley; they are more advanced at Berkeley.

7927. What subjects do you have at Laverton?—We treat of manures, cultivations and crops, and the way I have been guided there in framing the course has been to follow up subjects of immediate local interest.

7928. I noticed when you were speaking just now about your suggestion of agricultural clubs for village lads, you rather suggested that it would be a case more for the village schoolmaster than anybody else. I am not quite certain that I heard you correctly, but I think I heard you say where the village schoolmaster was interested in nature study?—Yes: where he is interested in nature study and gardening and so forth.

7929. That means, to put it in other words, the village schoolmaster who is in sympathy with rural affairs?—With rural affairs and rural work generally.

7930. Rural work is rather a term that would tend to limit the thing?—Yes; it is rather an ambiguous term.

7931. (*By Mr. Lamont.*) I should like to ask you one or two questions about the dairy school at Gloucester. How many pupils have you there in these various classes?—I have the figures here. A certain number come to the central school and we have a great number outside. At the central school, in butter making, there were 25 pupils last year; for cheese making, 10 pupils. The same teacher also conducts classes out in the county and about 80 pupils received instruction in this way during the course of the year.

7932. Have you any cows of your own at this school?—No; all the milk is bought from a local dairy company, the quantity depending on the number of students who are at work at any given time.

7933. You order in advance the amount you will require on a given day?—Yes, as it is required. The instructress knows how many pupils are coming and she orders the quantity of milk that is required. Of course it is milk that comes from the farms round Gloucester, but we get it from the Dairy Supply Company, because we require it in such varying quantities.

7934. Do you give any instruction by way of inspection of the dairies from whence this milk comes?—No.

7935. You would admit, I suppose, that that is an important department of dairy work—the management of cows?—Certainly, from the point of view of hygiene.

7936. Yes, and the grooming and milking and other work in connection with the cows?—Yes, we depend, however, on the company to supply us with clean milk. Of course if anything is noticed wrong we lodge a complaint at once, but we do not go beyond the dairy company.

7937. You take up the work from the point when the milk is already provided from the cow, and the earlier part of the work, which at any rate in Denmark is thought to be so important, has so far not been taken in hand by you?—No. Not having a farm school we have not been able to go in for that part of the work. In Cheshire, at the Worleston Dairy Institute, we had a farm and cows and everything in the way of appliances, but we have not in Gloucestershire.

7938. Can you tell me whether at that school you spoke of in Cheshire there is anything done in the way of experiment and demonstration as to the result of feeding on the yield of milk, or as to the result of feeding on the percentage of butter fat contained in the milk?—When I was there they had not worked out any special results; I do not know if they have done anything since. It was more of a practical cheese school for teaching the girls the principles of cheese making.

7939. You would agree, I suppose, that an important advance is still possible in this country by way of teaching farmers to keep exact records of the amount of milk yielded by each cow in the dairy?—Yes, for anybody running a herd of cows that would be most useful information.

7940. And therefore only to breed from the cows which had a good record behind them?—Certainly.

7941. In Denmark, I daresay you are aware they have during the last 20 or 25 years brought up the average milk yield of cows throughout the whole of the country from about 500 gallons per head to over 700, and in one dairy that I am particularly acquainted with there, the average milk yield of the cows is 832 gallons. In another case it is over 900 and they have a very large number of cows. That has been simply done by keeping the milk records and making a selection of the cows and also by the adoption of the new method of milking so as to entirely exhaust the milk which is in the udder?—Yes.

7942. Are you aware whether that has been done in any dairy school in this country as yet?—I cannot say that I am aware of it having been carried out systematically.

7943. In Scotland I understand it is being carried out under the direction of Mr. John Spier, of Newton Farm, Glasgow, not in any school but on their own farms by an association of farmers?—Is that in connection with the Highland and Agricultural Society?

7944. No, it is a friendly organisation, but the Highland and Agricultural Society is watching their results very carefully, but I do not think it is associated with them in any closer way. I take it you would agree that the adoption of that system would be a valuable addition to the dairy school at Gloucester or any other dairy school in this

country?—Certainly, any work in that direction but, unfortunately, at the present time we have not got the funds to carry out such experiments.

7945. With regard to elementary school teachers, do you think it would be feasible to invite intending teachers on entering a training college to specify whether they prefer to take up as their life work teaching in a rural school or in an urban school?—Yes, I think it would be most advisable.

7946. And accordingly as they decide so their subsequent training might be differentiated?—Yes, modelled on those lines.

7947. Certain subjects would require to be eliminated or at any rate reduced in the time allocated to them and other subjects would require to be substituted, and in that way we might get by a system of natural selection the class of teachers in a rural elementary school who would perhaps be more in touch with rural things and more inclined to help onwards students who desired to take up agricultural life hereafter?—Just so.

7948. (*By Professor Middleton.*) You mentioned among your present needs in the county the provision of experimental fields?—Yes.

7949. Have you formed any estimate of the cost of furnishing such experimental fields as you have referred to?—I have not gone very fully into the details, as to the area we should require and so forth, but I have no doubt if we had certain funds that we could draw on we should get good local support in the matter.

7950. Lord Barnard indicated to you how necessary it was, if you were going to apply for Government aid, that you should make out a very strong case for it, and you mentioned the fact that these experimental stations were necessary, so that you should be able at any time to furnish particulars of the cost of setting up such stations?—I have not drawn out particulars for to-day because I did not think it was necessary to bring them with me, but at any time at short notice I could get full details and costs out.

7951. You indicated that one type of station which you required was an experimental grass station?—Yes.

7952. For what part of the county do you require that?—The Vale which is principally grass—permanent pasture.

7953. Have you any other type of experimental station that you require?—I should also like to see a demonstration orchard formed on the lines already mentioned. Perhaps we could spread the arable trials over different farms, but for pasture and fruit we want something permanent.

7954. Have you had any difficulty in getting land temporarily for experimental purposes in Gloucestershire?—Not at all; as a matter of fact, I have more land offered than I can really deal with owing to our limited staff.

7955. So that your real reason for asking for a permanent experimental station is that you would be better able to control the results than you can in a temporary one?—That is exactly the point.

7956. What type of scheme do you adopt in these experiments?—They are modelled as closely as possible on the lines of the scheme issued by the Board of Agriculture in 1903 adapting them to local circumstances.

7957. What particular type have you found most successful in Gloucestershire?—Manurial trials on swedes, which are the great crop on the hills, also on mangels, meadow hay, and permanent pasture.

7958. In your winter classes, which you mentioned, what subjects do you find most popular with the lads?—Manures, cultivations, feeding stuffs, anything that has a practical bearing on what they are doing on the farm.

7959. Subjects of which they can see the bearing on their farms at home?—Exactly.

7960. Have you tried in these winter classes at all to give instruction in the principles of elementary botany or anything of that description?—Not very thoroughly in the winter classes for young farmers. They are more of a practical nature. At Cirencester Grammar School I have been able to go into the sciences, but in the winter classes you want something of a more practical nature.

7961. You recognise the value of giving a science course, but in the winter classes you are of opinion that something of a practical nature is required?—Yes.

7962. You complained of the want of education of some of the lads who came to your winter classes?—Yes, dis-

Mr. D.
Turner.

12 June, 1907

Mr. D.
Turner.

12 June, 1907

location, if I might call it so, with their school work is what we principally complain of.

7963. How long have these lads left school before they come to you?—I have had many students from 16 to 25, so that the time since they left school varies considerably.

7964. At what age do you prefer them?—If I had my way I should like to take them as soon as they leave school and train them up, but I do not get the opportunity of doing that; I have to make the best of the material I get.

7965. These courses last for the one year I understand?—No, I have been going to Berkeley for three years.

7966. I was not thinking of Berkeley in particular?—And at Charfield I have had them for two years.

7967. Do the same men come back again for another course?—Yes, the same men come back again, but what I complain most particularly about is that the continuity is broken when I have to leave the district to go elsewhere, and for this reason I should like to see a permanent school established at Gloucester, or some other central place.

7968. The type of institution which you really want at the present time in the county is a winter school in Gloucester, or at some central place?—Yes.

7969. How would you compare such an institution as you suggest with an institution like the one at Holmes Chapel for instance. Would you have a more extensive curriculum, or would it be of a more elementary type?—It would be of a different type, but fully equipped with apparatus, and I should not expect the young farmers to come up more than two or three days a week. It would not be necessary for them to come into residence.

7970. You want them to come up for certain days in the week?—Yes, to take out classes. In this way the courses would be made continuous and more complete, such subjects as agricultural chemistry and botany, practical agriculture, dairying, and fruit growing would be taken.

7971. It would be something different in type from the institution at Holmes Chapel?—Yes, it would not be a complete agricultural course.

7972. (*By Mr. Latham.*) Coming from Cheshire as you apparently have done you find Gloucestershire in a much worse position because it has no centre?—Yes, owing to its having no centre.

7973. Do you think that is the real cause of it?—That is one of the reasons. Of course things generally have not been developed so fully, as far as education is concerned, as in Cheshire.

7974. Has the fact that there is no centre been a reason in all probability why little interest has been shewn?—Partly, unless you call the dairy school a centre. That is the only institution we have approaching the dignity of a centre. I certainly think if a centre was developed it would accelerate things and stimulate an interest.

7975. With regard to your dairy school I was much struck with the numbers you gave us just now. You said you had 25 in one year for butter making. Surely that did not include the total teaching in butter-making during the year?—No; that only includes those who came up to the central school. The instructress also goes out into the county and is only at the central school on certain days.

7976. How often is it open?—The greater portion of the year; but most of the pupils come in the spring and summer. A great many of the butter classes are held in the villages.

7977. And ten pupils you said for cheese-making?—Yes, at the central school.

7978. I suppose the cheese making is rather a small industry in your county?—There is not so much cheese made now as there used to be.

7979. Can you tell us what is the reason for that?—The price of cheese during the last few years is one reason.

7980. It is very high, is it not?—It is a better price now and we have consequently had several pupils taking out classes in cheese making this summer. Another reason for the falling off in the manufacture was that farmers found there was less work at home and more profit in selling their milk instead of making it into cheese.

7981. Do you do anything to test the milk when it comes into the dairy institute?—You mean each morning and evening?

7982. Yes?—It is not tested each morning and evening,

but tests are taken from time to time. We also have a system of testing milk for the farmers.

7983. On what lines?—Testing for the percentage of butter fat, and we also calculate the percentage of solids by the scale.

7984. If you have no place to do it, where is that done?—We test it by the Gerber milk-tester in the dairy school.

7985. Do you send it to the farmers or do the farmers come and see it tested?—We send the results to the farmer. It is a scheme brought forward by the Board of Agriculture. We have issued a leaflet offering to test the milk for percentage of butter fat so as to let anyone know who is interested how the quality of their milk fluctuates.

7986. Have you done anything which is as satisfactory as the results shown on those cards of the British Dairy Institute (*Handing cards*) where there is not a point difference in a week?—No, we have not got out anything of this style. We have a record of the samples which have been tested during the various months for the last seven years.

7987. When you find that the register proves very irregular, have you taken any means of assisting the farmer in remedying the difficulty?—Yes, we generally ask them to state their method of feeding and management, and then, if there is anything very peculiar about the sample, we make any observation that is necessary.

7988. I daresay you are perfectly aware that feeding has very little to do with it?—Yes, from my own experience I have found that feeding by no means entirely controls the quality of the milk.

7989. What is your remedy for very bad records of milk?—If you are going to start a discussion with regard to the factors which control the quality of the milk it will take some time. Personally, I think the individual capacity of the cow has a lot to do with it.

7990. Do you not think that the regularity of milking and the way in which the milk is extracted from the udder has more to do with it than anything else?—They are certainly important factors, of course there is a great variation in the quality of the milk between the morning and the evening as we have found with the samples at our dairy school at Gloucester. I have just been drawing out a chart showing the results of the tests we have made there for the last seven years. I am drawing it out for our county agricultural show, as we have a nature study exhibit there, which includes a stand from the County Agricultural Department. There is a variation of nearly 1 per cent. between the morning and the evening milk taking the average throughout the different months for the seven years.

7991. Do not you think the regularity of the 12 hours has a great deal to do with the flow of milk?—Yes, certainly, the time between the periods of milking has an important effect both upon the quantity and quality of the milk.

7992. How far does your milk come to the dairy?—As I have already said, we get it from the Dairy Company; it comes from the farmers in the vicinity of Gloucester. It may come a matter of 3 to 10 miles.

7993. Why I ask the question was because Mr. Lamont asked you whether you were aware of the different methods existing in Denmark for carrying out this scientific instruction. Is there anything to prevent pupils from going to the farmers who supply you with milk and getting as much education on the farms there as though you had got your own cows and your own farm?—I am afraid some of the farmers would rather resent such visits. They would think we were in some way trying to supervise their methods.

7994. Even if you take their milk?—You see, we do not take it direct from the farm. We buy it from the Dairy Company.

7995. That is so, but probably the visits of the pupils would do them as much good as it would do the pupils?—If one could get friendly access to the farms it would be a benefit.

7996. My experience is that the dairy farmer has been more willing to be educated than any other class of man?—Well, to a certain extent.

7997. To a general extent. You have told us you have £1,500. I presume that is from the county. Is that allocated in special grants to different educational objects?—The Education Committee pay over the sum of £1,500 out of the Residue Grant to the Agricultural Sub-Committee for the purposes of Agricultural Education.

Mr. D.
Turner.

12 June, 1907

7998. Without any of it being earmarked or anything of that sort?—There is £100 earmarked for the Cider Institute at Long Ashton; we are a contributing county.

7999. You made the remark that you were so anxious to get land set apart for fruit culture and grass experiments. Do not you think it would be much better to go a little further and try and get a piece of land set out for the whole thing, partly for grass, partly for agriculture, and partly for fruit?—That would be an experimental farm.

8000. It seems to me that it is only begging the question to only deal with a portion?—It would be better, of course, provided we could get the funds for it. We are very much handicapped for want of funds at present.

8001. With regard to elementary schools, do you think it is possible you will get the young farmers and the labourers to meet and receive education at the same time in the evening?—You would get the sons of the smaller farmers to receive education at the same time as the labourer.

8002. That means virtually labourers that are farmers I suppose?—Yes; with a special view to the requirements of the young labourer, however, we are developing the two trial evening school courses that I have already mentioned, working on very practical lines.

8003. Where are those evening schools to be held?—One at Cam and one at Almondsbury. They are two trial courses specially adapted to the wants of the labourer and small farmer.

8004. Those two are very small places?—Yes, but we selected them as being typical agricultural centres; they are both in the Vale.

8005. If you could get this farm for both agriculture and horticulture and anything you might require, do not you think the local support would be very much more given to such a centre. Reading College, for instance, is covering a large part of the country and our kind friends are giving us a very large sum of money to support it. It is supported very much by the aristocracy and the county people of the district. Do not you think, if you could get such an institution in Gloucestershire, it would be very much better than having all these small centres?—Yes, but the difficulty is to get the capital for the initial start.

8006. I quite agree. It would be a very valuable thing for the county of Gloucestershire if something of the sort could be arranged?—Quite so, provided a workable scheme could be developed.

8007. What do you call workable. Is not there an opening for such a thing?—In the future I think there will be.

8008. Going back to the higher sphere of agricultural education, do you think that your farmers in Gloucestershire are receiving as much education as is beneficial to them for their good?—They are receiving as much as our income will afford.

8009. I do not want that answer. I want to know whether you think if you were able to do more you could find room for more?—Yes, provided we can develop on the lines I have sketched out here.

8010. I will put it to you in another way. Do you feel that the county of Gloucester is so very far behind that they would not take advantage of this education if it was offered to them?—I will not say as much as that, but I consider that the people want educating up to take advantage of what is being offered them: I do not think you could rush the thing. I think they want leading up to it, and that is what we have been doing during the last three years.

8011. Do you think the surrounding counties would come to you if you had such a central institution in your county?—That is rather an open question at the present time; we might get one or more of the neighbouring counties to join with us, but I cannot say offhand how that would be.

8012. With regard to these agricultural clubs for the village boys, have you tried it or is it simply a suggestion of yours?—It is partly a suggestion and partly what I have seen. For instance, some of the schoolmasters at the present time have got the lads interested in agriculture and rural pursuits in one or two of the schools, and from what I have seen here and in Cheshire I certainly think the idea might be developed.

8013. Would you just give us a very small instance of how you would develop such a thing?—On the boys leaving the elementary school to get them sufficiently interested to join an evening school class, and in connection

with that to form a small agricultural club where they could have meetings periodically and where they could bring specimens of things of interest in their everyday work and discuss them—specimens of insects and plant diseases and so forth, it would be very valuable.

8014. Would it be of any value if those sort of things could be joined to the village flower shows, for example, which often create very great interest in the villages?—Where they have got a horticultural society it might be possible to link it on to that.

8015. Do you not think it would be rather more likely to succeed on such lines?—Yes. I know one instance where the schoolmaster is the secretary of the local horticultural society, and it might be linked on in that and similar cases.

8016. The schoolmaster generally is the secretary of the local horticultural society, and if you could link it on to those you would then have the whole village with you instead of having only these small village clubs?—Yes, it would be better to link it on in that way just as at Berkeley the young farmers' class is conducted under the auspices of the Berkeley Hunt Agricultural Society.

8017. There was some remark made just now with regard to the training of elementary teachers to take up rural work, and the training of teachers to take up urban work, but do you not think that the urban man has very much that is in unison with his rural brother—for instance, in my own part of the country we have a very large exodus from the town whenever we want labourers for harvest work, potato-picking, pea-picking, and all that sort of thing?—Yes, but that is just during harvest time.

8018. Our great complaint is that these men come to us great dunces with regard to agriculture, and do not know, many of them, the difference between a swede and a turnip or a potato and a turnip?—Of course they are not much good, many of them, and you would hardly expect them to be, except for putting on to hop-picking and that sort of thing.

8019. Could not they learn a good deal in the towns with regard to agriculture? Do you not think there are as many allotment holders in the towns as there are in the country?—There are a great many of such allotment holders in most of the towns of Gloucestershire.

8020. The largest number of allotment holders that I know of is in the city of Oxford, and I cannot help thinking that if the schoolmaster in the towns could be taught something, so that he would be able to give instruction in gardening; for instance, there, it would be of quite as great an advantage as it would be in the rural districts?—Some of these rural subjects, I consider, are quite as educational for the town teacher, as I have already mentioned, as other subjects. They develop his powers of observation for one thing.

8021. I am myself so very much against having two distinct persons—one specially trained for rural teaching and one specially trained for urban teaching?—I certainly think they should take out some rural subjects in common, such as gardening and “constructive carpentry,” but whether the town man should take a rural course as well as his ordinary course is another question, and one that I am not prepared to answer, but I certainly think, as far as the rural man is concerned, he requires a special course to suit him for his vocation.

8022. Have you done anything in the way of experiments with potatoes?—Yes, we have had some trials with Scotch seed as against English seed, and this year we have also started manurial trials with potatoes at four centres in the county.

8023. I suppose it is fair to ask you whether the results of your trials have been published?—Yes, I have some of our published trials here—the ones that we carried out last year (*Handing in books*).

8024. (*By Mr. Davies.*) I suppose in Gloucestershire you come across agricultural problems which you did not meet with in Cheshire, the conditions not being similar?—Yes, that is so.

8025. Have you any provision for any kind of research work at all? Does the County Council provide you with any apparatus for carrying on research in any way?—No, I am afraid not, unless you call some of this experimental and demonstration work research, and you can hardly call that research. But beyond that we have no apparatus to carry on the research work, not even a microscope, the want of which I felt very much the other day when we were looking for American Gooseberry Mildew.

8026. You have not any college with which you are

Mr. D.
Turner.

12 June, 1907

linked up which could assist you in enquiring into these problems?—No, we are linked up to no college whatever.

8027. I see you say in your *précis* that the development in the future of a college for a group of counties is desirable. Have any negotiations taken place with the adjoining counties with a view of starting an institution of this kind?—So far as my Committee is concerned nothing has been done up to the present time.

8028. I take it that is the line on which you would like to see it developed?—It would certainly assist the work if we were linked on to some institution where we could get expert advice when necessary.

8029. Has your Committee considered that it might possibly be linked on to the University College at Bristol for example?—No, nothing has been discussed by my Committee at present, although some such steps might be taken with advantage.

8030. Have you made any provision for agricultural laboratories?—No, that is one thing we might develop with the winter school. I did not draw special attention to it, but that is a thing which has been in my mind for some time. We have no laboratory at present where we can give instruction or where the staff can carry out any research work. In connection with this winter school, a county laboratory for the purposes mentioned would be one of the most useful additions we could make.

8031. Are there any laboratories existing at present which might serve as a basis?—There is none in the county that I know of.

8032. (*By Mr. Medd.*) I think the amount allocated to agriculture in your county is something like £1,500, is it not?—It is.

8033. That is somewhere about three times as much as they have in Berkshire—probably you do not know how much they have in Berkshire?—No.

8034. It is about three times what they have in Berkshire. How many scholarships have you?—Two at present.

8035. They are both at Reading?—Yes. They are advertised to be tenable at any agricultural school or college agreed to by the Committee.

8036. You are receiving excellent accounts from Reading with regard to those scholarship students?—Yes, the report on the work of the students is very good indeed.

8037. The Reading witnesses who were here the other day spoke in the very highest terms of the two students from Gloucestershire. You mention here about the development of a college for a group of counties. Have you formed any idea yet as to what group it should be?—No, I have not gone into the matter. I simply mention it with the idea that if anything is done in the future it would be best, considering our financial position, to join in with a number of counties. We have no such institution in the west.

8038. As you see on the map there it is all white, and they might be grouped as they are in other parts of England?—Yes. If we were to take Gloucester indi-

vidually, one man would say it ought to be modelled on the hill system, and another man would say it ought to be modelled on the vale system, and that would not occur if the counties were grouped.

8039. You mention here the formation of a winter school. Have you formed any idea as to what the winter school should be—how long should it be open?—For teaching purposes during the winter six months, and as a bureau of information during the whole year.

8040. Has anyone expressed his readiness to support a winter school?—I have talked it over with one or two of the farmers who have sons, and they would be willing to send their sons.

8041. Where do you think of having it?—I should suggest at Gloucester, because that is the most accessible spot for the whole county.

8042. Can you give us an idea as to the general work that is done at Berkeley?—The course of work we take out in the winter class?

8043. Yes.—The syllabus followed in the evening class includes the following subjects:—Soils, manures and feeding stuffs, estimating values from analyses, live stock, their points and management; practical demonstrations are given, including judging the live and dead weight and value of cattle, sheep, and pigs; feeding experiments have also been conducted to determine the live weight increase and return from various rations.

8044. Is there any instruction in machinery?—Yes, we have just started classes in "the care of farm machinery."

8045. With the machinery instruction are any lessons given in simple mechanics?—Not up to the present. So far the work has been of a practical nature, in which a machinist makes the young men take various farm machines to pieces and put them together again, at the same time shewing them how to effect small repairs in the field.

8046. That is a very successful class, is it not?—Yes. We had a class of that kind at Chipping Campden, and it was very much appreciated by the farmers in the neighbourhood.

8047. You mentioned the formation of agricultural clubs for village lads. What is that?—It was a suggestion on my part that in places where there is sufficient local support, the village schoolmaster, or some other person interested, should form a club to interest the lads after they leave school in agricultural subjects, and where the circumstances are favourable should connect it with a school garden.

8048. Something like the agricultural clubs they have in America?—Yes, on somewhat the same lines.

8049. (*By Mr. Davies.*) Do you charge the students who attend your night classes any fee?—We charge them a small fee just to cover local expenses.

8050. Do you find the classes are attended in good numbers?—Yes, taking them altogether they have been very well attended.

(Lord REAY in the Chair.)

Mr. H. W. HOUSEHOLD, M.A., called and examined.

Mr. H. W.
Household.

8051. (*By the Chairman.*) You are the Secretary to the Gloucestershire Education Committee?—Yes.

8052. I think you are prepared to give the Committee some evidence with regard to the obstacles to the development of agricultural education?—Yes. The first is the financial obstacle. That has been dealt with by all the witnesses this morning. I do not think that we are likely to be able to do any more for agriculture unless we get some help from outside. There are so many calls upon the "whisky money" for other branches of education that I am afraid, even although there were any increase in the "whisky money," it would be absorbed before it came to agriculture, and that is why I think that any money that came from any source for agricultural education ought to be ear-marked. I think nothing can be done unless there is some ear-marked grant, and I also think that you will not get any great support locally for agricultural education unless it is elicited by an offer of a grant either from the Board of Education or from the Board of Agriculture in support of that teaching.

8053. You would require local grants proportionate to grants from the Board of Education or the Board of Agriculture?—Yes, such a condition might elicit help from the rates. At present we have no proper scholarship scheme in Gloucester; we have had to drop it for want of funds. A general scheme of scholarships to produce elementary teachers would cost us quite £2,000 a year, so that a grant of £2,000 not ear-marked would be absorbed in those scholarships at once, and none of it would reach agriculture.

8054. Any general fund that came in would have to go to these other scholarships?—Yes.

8055. Of course that would not apply to any grant you might get from the Board of Agriculture?—No.

8056. Then your next head is that there is no institution for agricultural instruction in Gloucestershire?—No central institution. When an instructor goes to one village one year and another village another year there is no lasting effect. He has only six evenings in the week at his dis-

Mr. H. W.
Household.
12 June, 1907

posals, and there is only a small part of the year in which the work can be done, and if it lasts anywhere as long as it does at Berkeley he has to neglect other districts because he cannot cut himself up into different pieces, and unless there is some sort of central institution established I do not think there will be any continuity in the work.

8057. You think the agricultural lectures ought to have a definite aim?—Yes, I think from the bottom, the elementary school, upwards there ought to be a definite aim; there is no linking of the thing up at present.

8058. The lectures given to farmers who are of a certain age can only, of course, have for their object aid to the farmer in the industry?—Yes.

8059. You contemplate two kinds of lectures, I suppose?—I am not thinking about the farmer at the moment. I know nothing about that side of the work, but I think you will not get any very great results until you have got the elementary school child to pass on to the evening class directly he leaves school, and prepare him to receive technical instruction in such a way that the time of the technical instructor in agriculture or whatever it may be shall not be wasted in teaching the pupil elementary details over again.

8060. You are of opinion that there should be proper grading?—I am not quite sure that I follow what you mean.

8061. Proper grading means from the elementary school to a secondary or agricultural school, and from that school to a college. I understand that is what you were suggesting?—Yes. That is what I mean.

8062. That is what has been called "grading"?—There would be several avenues from the elementary school. Some would want to go to the secondary school, and some would go from the elementary school to evening schools in touch with agricultural schools perhaps, and then on to the college.

8063. As we are on the subject of grading, you mention that the organisation of different branches of education should be "vertical and not horizontal." What is the horizontal organisation?—The boy's education at the elementary school stops when he is 13, and a certain set of people think only of what he has to do up to the time he is 13, and not of what is to follow beyond that age. They are not preparing him for what is to follow, unless, perhaps, he is to go to a secondary school. Any scheme of education ought to be looked upon as a whole, and the elementary school ought to be taught and inspected and organised by people who have got a complete scheme of education in their heads, and not only a part of one. The elementary inspector and the elementary teacher have very little knowledge of what the boy is going to do afterwards, and very few of them care about it. The elementary inspector, if you asked him what better the boy would be in three or four years' time, would say: "That is not my business," and it is not, but it ought to be somebody's business to look to the thing.

8064. Are you advocating that there should be the same set of inspectors for elementary schools and technical schools?—Partly. I would like to see one man responsible for the whole work to the counties. The counties have the scheme of education as a whole before them now, and they try to link up the whole thing, but they deal with inspectors who only have parts before them of the scheme of education, and there is nobody on the spot to link up the whole thing, and you may have inspectors from different branches making contradictory recommendations. For instance, the most valuable suggestions I get come from the technical branch of the Board of Education; in many cases they are most admirable suggestions, but if you try to put them into practice you find yourself fettered by the want of sympathy on the part of the elementary inspector, or by the rigidity of the code. For my part, I should like to have central schools, which should be better than other schools, where you could give a more efficient practical instruction, and I would like, on the top of those schools, to see something of the character of a polytechnic—we have got one of them, and I hope we shall have more—and then the boy would see before him from the time he entered the school, a complete course, and would understand more or less the value of the lessons he was receiving in the day or the evening school. I say he does not at present, and that part of the work is of a wholly unpractical character. He is taught to read, but not to read a book, and he is taught to do sums, but not to apply his arithmetic; and he is taught to satisfy the inspector when the examination comes round, and in two or three years' time he has practically forgotten it all, and therefore it is wasted. We have one school in Gloucestershire in connection with an old polytechnic, and

in that school the boys spend half their time in wood and ironwork and designing in connection with it, and the literary part of the work is cut down a great deal; there is not nearly so much history or geography; grammar is cut out altogether and arithmetic is directed to the problems that the boys have to work out. They have a certain amount of instruction in modern topics, what is going on is talked about, and the materials they deal with are talked about, and a good deal of geography is got in that way. We find the result of that is that the boys are very keenly interested, and employers are quite willing to take them, because they find they are handy boys and have got their wits about them. But the best test of the efficiency of a school like that is that the boys stop longer. They used to leave school at 13, but now they show an inclination to stop till they are 14 and, further, those boys come back voluntarily to night school, and many employers make it a condition when they take them on that they shall continue to attend the night school. If you give them some practical instruction of which they can understand the value and which will have some relation to the work they will do in after life and will tend to make them skilled, they are willing to have instruction. A polytechnic could be built up on those lines either of a town or a rural character, or, in fact, of any character suited to the needs of the district.

8065. Where is that school to which you refer?—It is at Brimscombe, near Stroud.

8066. Does it earn a grant?—Yes, as an experiment the Board of Education have allowed it to be conducted as a public elementary school, and they are paying them the elementary school grant.

8067. Although it does not fulfil all the requirements of the code?—I suppose it does not exactly fulfil them, although I do not think you could say it broke any rule of the code. In one respect it runs outside the usual limits; the head master is not a certificated teacher at all. He is the head of the Polytechnic, an art master with considerable craft experience, and the Board of Education have allowed him as an experiment to be recognised as the head of that school. That is the line, in my opinion, that is wanted in both teaching and inspection; in the elementary school you want a man who knows something of the work above, men who have a comprehensive view of the whole scheme. Take the public school system: everyone will admit it would be ridiculous to put in a preparatory school a man who knew nothing about either public school or university. It would not work. You want a similar system in public education, and if the higher education is going to take a technical line, you want something in the elementary school definitely leading up to that technical line. I do not mean that the boys are to be less educated or worse educated in a literary manner than they are now. I think they would really be better educated, because they would be better able, if this system were adopted, to understand, retain and apply what they learn. The technical instructor is quite as keenly interested in the efficiency of the general education as the elementary man is, because he it is who finds out the weakness of the pupils who come to him, and knows where the thing breaks down for want of previous preparation. Sometimes people think, if you are pleading for instruction of a more technical and practical character, you are neglecting the literary education; but you are not, because, at this Brimscombe school that I spoke of, the boys do better work in the literary subjects although they give less time to them, and the same with the girls who do domestic science. They give 10 or 12 hours a week to domestic science and less time to the other subjects, but they actually do better in them. The thing is to try and make children think a little more for themselves and pour a little less information into them.

8068. The school you have been speaking of is for town boys more, is it not?—It is in a manufacturing district, but it is really a village; there are not more than 2,000 people altogether, and boys come from all the surrounding villages to it.

8069. It is a school for artisans chiefly; it is not a school with a view to giving farming instruction. A polytechnic is for artisans primarily?—It is.

8070. Therefore the main object of a polytechnic of this description linked to a school is for industrial development principally?—Yes, but we propose to do something in that way for agriculture.

8071. I quite understand. You think the same principle that applies to the polytechnic and the school which is linked with it for industrial development should apply to the rural school, and that the rural school should be linked up

Mr. H. W.
Household.
12 June, 1907

with a polytechnic for the purpose of agricultural development?—Exactly, and I would like to have at the head a man who had done agricultural teaching himself. The head of the polytechnic should see that the whole scheme of work from the time that the child came to the elementary school was one directed to the development of agricultural education.

8072. You propose that the teacher in the higher school to which you want to send them should have or take part in the direction or management of the inferior school?—I do.

8073. That is your view?—Yes, and I should like to see the same view taken by the inspecting bodies whoever they are.

8074. You want the elementary and evening schools made more attractive?—I do not want any sort of recreative classes.

8075. I do not say that; I mean you want the instruction to be given in such a way as will attract the pupils?—Yes, the instruction in the evening school fails in just the same way as in the elementary schools, because teachers are giving wrong instruction in a wrong method. What is bad in the elementary school is really worse in the evening schools. The work at Almondsbury and Cam that Mr. Turner spoke of promises to be interesting. It is based on the very valuable Memorandum issued by the Board of Education on "Courses of Work in Rural Evening Schools," and the foundation will be laid in the elementary school. If the Brimscombe experiment is approved by the Board of Education, we shall introduce gardening and carpentry and rural experiments, and the boy who has been through that course until he is 13 or 14 will pass on to the evening school at once when he leaves the elementary school. The schoolmasters at Cam and Almondsbury are trying to make their school work lead up to Mr. Turner's classes. The only reason why it is done on a small scale at present is that we have no money; but if these things succeed, in three or four years' time we shall have a great many of these schools no doubt. For my own part I would reduce the expenditure on the elementary schools for that purpose. I think the requirements at present made by the Board of Education are unwise; I mean I would not spend so much upon furniture, and altering buildings and that sort of thing for the present; we want the money for teaching, and many schools, I am sure, are quite good enough as they are, and if only one could get the teaching done properly, one should be satisfied. I would like to take money away which I think is wasted in that direction and give it to higher education, and until something is given compulsorily for higher education, I think it is useless squandering money on what is really unnecessary. Half the work that is done in the elementary school is entirely thrown away because it is never carried further; the boys merely become unskilled labourers; they become weight lifters; they have no skill, and they are none the better for what they have done at school.

8076. You suggest that the elementary school should be brought also into greater harmony with the evening classes?—Yes.

8077. The elementary school should lead up to the evening classes that are taken by Mr. Turner?—Yes, and then from these evening classes the boys would drift into the polytechnic. If you had these polytechnics dotted about, six or eight of them, in the county you might have some reason then for going on to a central institution, an agricultural college worked by a group of counties, but I should begin organising from the bottom until we get the demand for the thing. It is no good starting from the college first.

8078. Would the pupils at the evening classes afterwards go to what we have called a winter school?—I imagine some of them would if there were a winter school within reach.

8079. Some would go to the winter school and others would go to college?—A very small number would go to college, of course, only the pick.

8080. You are of opinion in order that the college work may be made more efficient that the students should have been at some secondary school?—Yes. I do not think the pupils who have only gone through evening classes, except in very, very rare cases, will go to college.

8081. I want to know how you apply your theory to secondary schools preparatory for the college. Most of the evidence we have received is in favour of the ordinary general secondary education being the right sort of preparation for the college. Are you of opinion that the secondary schools for agricultural students at agricultural colleges should be

differentiated from the ordinary secondary school which leads up to the university?—I am not sure that I have had enough experience to give a valuable opinion. I think in all those schools you want much more practical work than you have. I think much of the teaching is far too abstract at a secondary school. When I was taught I consider my own teaching to have been much too abstract and for that reason I never understood at school a great many of the subjects which I might have understood, and I learned things by heart which might have got to my intelligence. Everything that can be taught in a practical manner I would have taught in a practical manner, and in a secondary school in an agricultural district I do not see why the practical teaching should not take an agricultural character. I should make it. For instance, what is called nature study, a lot of it is nonsense at present. The nature study in a secondary school in the country should have something to do with farming and rural life generally. It is usually made botany, probably taught from a textbook to children who have never used their eyes. That is not nature study and it ought not to be done like that. I would give everything the utmost amount of practical bearing that can be given to it, and a lot can be given to it. For instance, Mr. Turner's teaching at Cirencester appears to be a success. The headmaster likes it. It appears to be nature study, but it is really a practical agricultural study taught to farmers' sons.

8082. Your idea is that a general reform in the methods of teaching is necessary both as regards elementary and secondary schools?—Yes.

8083. You mention the analogy of the public school and university system or of institutions like the Merchants Venturers College at Bristol?—Yes. The Merchant Venturers Technical College has a technical college at the top, a secondary school below it and a preparatory school below that. They found it necessary before the Act of 1902, and before education was better organised, to prepare the boys through every grade of their education.

8084. Therefore what you consider advisable is illustrated by that institution at Bristol?—Yes, and also by the public school and university system generally.

8085. Is the institution at Bristol conducted on those practical lines which you have described?—No, not wholly, a good deal of the teaching is probably very much like the usual teaching in a secondary school.

8086. So it does not wholly realise what you aim at?—No. I only cite it as an illustration of the need that was felt for organising every grade as one whole comprehensive scheme. I do not really know enough about the class teaching at the secondary school to say anything about it.

8087. You believe in the grouping of villages?—Yes. I would not have every elementary school a complete reproduction of every other as at present. One wants something like the Macdonald schools in Canada. I would not compel the children to attend the school, but I would put up such a school in a centre at a place like Berkeley, or in the hills and allow the children to come to it of their own accord, and after a time you will find the children will want to come, and you will be able then to close some of the smaller schools in the other villages. The Board of Agriculture are opposed to the closing of small schools, and quite rightly, because they say labourers will not go to the villages if you close the small school. You cart the children to the larger one where the instruction given is practically the same, and there is nothing to convince the parent that there is anything gained by going to the larger school, so they would rather go to the school at their doors, but if you give better instruction at the central school they will be anxious to come. Carting is a great economy. We closed one small school and carted 25 children two miles each way every day at a cost of £50 a year. You cannot carry on a school for 25 children under £80 or £90 a year at the very least, and we cart in several districts like that, but it is always resented by the people, and for the present we have given up attempting to compel them to submit to it. We rather rely on a successful experiment like Brimscombe, to bring them in of their own accord.

8088. Is there any trouble at Brimscombe in getting them there?—No. Some boys come in by train for four or five miles and some walk three or four.

8089. Are any travelling allowances made?—No, they come of their own accord.

8090. You think it would be an economy to close some

of the smaller schools and to take children in vehicles to the larger ones?—Yes.

8091. Further, you would have as little of the Code as possible in order to have as great variety of instruction in agricultural education as might be possible?—Yes.

8092. You think if there is this complete linking-up of elementary and secondary education then a great deal must be left to the people who control the secondary education in directing the method of instruction at the inferior school?—That is so—secondary and technical I should like to say.

8093. Then you expect a great gain from continuity in schemes of work and from keeping a definite and complete plan of education before scholars and teachers. You prefer that system to having constant changes?—Yes.

8094. So that the girls and boys too should know exactly what was ahead of them?—Yes. I would like them to see if they could on entering school what was ahead of them. That is why I attach some importance to these schools being established, running up to a polytechnic at the top. I would like to have the elementary school and the polytechnic, and in some cases a secondary school, all in one building, so that the boy can see there is something to go on to, which he does not see at present, and then the teaching should be as much as possible in relation to the industries of the district, whatever they may be.

8095. That involves the provision of facilities for various types of training?—Certainly, whereas there is only one at present.

8096. You consider at present there is too much of one groove in the training of teachers?—I do. It is hardly fair to say that teachers are trained at present because their education and training are so inextricably mixed up together. When a teacher is working for some academical examination and the whole success of his future career depends on the way in which he passes that he is not apt to think sufficiently of the professional training, nor does the college in which he is trained. I would separate the two entirely. I would have academic work and examinations done with entirely before the man came to be trained, and I should rather like to see training colleges aiming at producing teachers of very varying types. At present your agricultural instructor and your technical instructor and in many cases your secondary schoolmaster is not trained at all; it is only the elementary man; and he is really educated rather than trained. I would like to see some colleges training a teacher with a view to his going into technical work and engaging in organising and teaching from the elementary school upwards; and I would train in different branches of technical work, mining,

agriculture, textile work, iron work, and so on. I want them to be trained so as to look on the system of education as a whole from the top to the bottom. I do not want any teacher to think that his work with children is done when those children are 13, or any teacher to think that his work with children begins when they are 15, as the case may be. I want them to look at the thing as a whole. I quite agree there must also be training colleges of the exclusively literary type, and there always will be boys who will want to go on to the university and other places for working out a curriculum of a purely literary character. I would put that on a par with the rest, but I would not make the whole of the teachers' education and training literary.

8097. Your view is, of course, that a university degree is desirable, but that besides the university degree there ought to be institutions where teachers are trained for the purpose of exercising the methods of teaching which you have indicated?—Yes; I have found that the life in a good many of the elementary schools really begins to throb when you get the technical instructor in it. Our mining instructor in the Forest of Dean has found out the shortcomings of the boys who come from the elementary school, and he has been pointing them out, and I think in a very short time, if we adopt his suggestions and link up the work of the elementary school with his classes, really it will be the mining instructor who is the head of all the elementary schools there, and that is as it should be.

8098. Then with regard to inspection?—I have already said you may get very good advice, as we do from the inspectors on the technical side of the Board of Education, but it is all undone because you get the want of sympathy on the elementary side of the Board. I think you want the inspector, like the master and like the local authorities, to look at the scheme of education as a whole and to take a comprehensive view of it. I do not know whether I should be travelling outside my ground if I were to suggest a scheme of inspection.

8099. Then with regard to village reading rooms and libraries?—I say it is absolutely useless to give boys a really good education and make them anxious to learn and to educate themselves if you do not put some facilities in their way by giving them books to read. These boys have very few books of their own and they cannot get at them. I think it is a necessary corollary of education of this description that the boys should go on educating themselves, and they can only do that if you have these reading-rooms and libraries where they can go and get such books as they require. I want them to educate themselves and not to think that everything is done when they have passed at 13 out of the elementary school.

Mr. H. W.
Household.
12 June, 1907

SEVENTEENTH DAY.

Thursday, 13th June, 1907.

PRESENT:

The Right Hon. Lord REAY, G.C.S.I., G.C.I.E. (*Chairman*).

The Lord BARNARD.
The Lord BELPER.
Lord MORETON.
Mr. DAVID DAVIES, M.P.
Mr. THOMAS LATHAM.

Mr. J. C. MEDD.
Professor T. H. MIDDLETON, M.A., M.Sc.
Mr. A. E. BROOKE-HUNT (*Secretary*).
Mr. H. L. FRENCH (*Assistant Secretary*).

(Lord BARNARD in the Chair.)

Mr. T. F. ROBERTS, LL.D., called and examined.

8102. (*By Lord Barnard.*) You are Principal of the University College of Wales at Aberystwyth?—I am.

8103. How long have you held that appointment?—For 16 years.

8104. You are well acquainted with the history of the

attempts on the part of that College to supply higher agricultural education?—I am well acquainted with them in a general way without being an expert in agriculture.

8105. Perhaps you will give us very shortly any information that you have. I think you have prepared a

Mr. T. F.
Roberts.
13 June, 1907

Mr. T. F.
Roberts.
13 June, 1907

summary of the work that has been done?—Yes. The beginning of agricultural education in connection with Aberystwyth College dates from as far back as 1876, four years after the establishment of the College, which was at that time maintained entirely by voluntary contributions from the supporters of education in Wales without any Government grant or any other public grant whatever.

8106. Would you tell us what the main lines of the College were at that time?—It was a University College with arts and science departments, but with a small staff of about ten or a dozen professors and lecturers. In 1876, a Carmarthenshire Welshman (Mr. Henry Parnall) having placed a sum of money at the disposal of the Council for the purpose, a course of lectures on agriculture was delivered in the College by Professor Tanner. Mr. Parnall may be regarded as a pioneer of agricultural education in Wales.

8107. Perhaps you will tell the Committee how far your other duties, as principal, cover the agricultural department?—I am principal, and in that capacity have a general responsibility for the agricultural department, but I have no expert knowledge; my knowledge belongs to an altogether different department. I may explain to the Committee, to save time, that the reason that I am here rather than an expert in agriculture is that it could not well be otherwise, the agricultural department having been reorganised during the present year, and a professor of agriculture having been appointed to undertake control of the whole work who has not yet entered upon the duties of his office. That is the reason why I, rather than a member of the agricultural staff, appear before the Committee.

8108. The agricultural department like all the other departments of the College is, I presume, more or less under your control?—That is so.

8109. You are well acquainted with what goes on in it?—I am well acquainted with what goes on. At the expense of Mr. Parnall, Professor Tanner's primer on the "First Principles of Agriculture" was translated into Welsh, and 20,000 copies of it were distributed among young Welsh farmers. He left a legacy of £5,000 to the College, which was applied towards the maintenance of the chair of chemistry, which was regarded as having a special relation to the industries of the district.

8110. What do the industries of the district include besides agriculture?—They are mainly agricultural. Courses of lectures were given by Professor Tanner in the College attended by the ordinary students and special courses for teachers, and the College was recognised as an institution in which scholarships for the principles of agriculture could be held. The attendance at the lectures proved insufficient to justify their continuance, and this early experiment in agricultural education came to an end. The present department of agriculture was commenced in June, 1891, when a lecturer in agriculture, Mr. T. Parry, was appointed. In October of that year the Agricultural Committee reported —

8111. What is the Agricultural Committee?—That was a provisional Agricultural Committee which was appointed at the start. In October of the year 1891 the Agricultural Committee reported that the total expenses up to October 2nd, 1891, including the salary and travelling expenses of demonstrator, &c., were £75 2s. 1d., against which they have received from the County Councils the sum of £150, and further, "hitherto the work has been confined to breaking ground by practical dairy demonstrations." The Committee, however, always regarded this as preliminary to the establishment in or in connection with the College of a complete system of technical and agricultural instruction for which they anticipated that a demand would soon arise, and they ventured to urge upon the Council that the question of laying down a scheme of such instruction should be taken into early consideration.

At the governors' meeting in October, 1891, the outline of such a scheme was submitted, to be subsequently worked out in consultation between the College and public bodies charged with the promotion of technical education in the central counties of Wales.

8112a The first prospectus of the department was issued for session 1891-2. In December, 1891, it was decided to apply for a grant from the Board of Agriculture. A grant of £250 was received in respect of the year ending March, 1892. In February of that year an assistant lecturer in agricultural chemistry, Mr. Murray, was appointed, and in November an assistant lecturer in agriculture, Mr. James Wilson.

The seven County Councils of central and western Wales made grants for the work done within the area during the year 1892-3 as follows:—

Cardigan	£250.
Pembroke	£100.
Brecon	£100.
Radnor	£100.
Carmarthen	£350.
Montgomery (for part of the county) ..	£110.
Merioneth (for part of the county) ..	£160.

These first grants were applied to the following objects:—

- (1) Travelling dairy schools.
- (2) Extension lectures.
- (3) Teachers' classes.
- (4) In the case of two counties—Cardigan and Carmarthen—to scholarships or exhibitions tenable in the Agricultural Department of the College.

8111c In November, 1892, also, instead of the previous Agricultural Committee, an agricultural and technical Instruction Committee was constituted, six of its members to be appointed by the College and three by each subscribing County Council.

In March, 1893, a deputation to the President of the Board of Agriculture sought a larger grant from the Board on the grounds:—

- (1) Of the needs of the agricultural curriculum within the College, for which the limited fund at the disposal of the County Councils made it impossible for them to provide.
- (2) The very large area in which the out-College work was conducted, and the large sum (amounting to two-sevenths of the gross receipts in 1892) expended in travelling and transit owing to defective means of communication in large portions of the counties.

These are seven typical counties in central Wales, and the difficulties of transit are very great.

8111e The work developed rapidly, and the grant from the Board of Agriculture rose from £250 to £500 for the year ending 1893, and to £800 in 1895.

In the report for 1893-4, the work done was stated to include:—

- (1) A two years' in-College course organised for the diploma of Associate in Agriculture.
- (2) a A six weeks' course for County Council scholars in dairying.
b Travelling dairy schools.
- (3) a Lectures to farmers at various centres.
b Illustrations in manuring.
- (4) Courses in agriculture and chemistry to elementary teachers at the College combined with laboratory practice.

8111f Summer courses were held at the College in August, 1893-4. They included several groups, among them chemistry, agriculture, botany, zoology, students being required to select one group.

In January, 1893, Mr. Parry made a supplementary report to the Carmarthenshire Technical Committee suggesting:—

- (a) That a further grant of £100 should be applied to assist scholars from the county to take the two years' in-College course.
Holders of similar County Council scholarships from England were reported to be in attendance.

The following Scholarships were offered for competition in September, 1893:—

- | | |
|--|-----------------------|
| 3 Open Exhibitions of £10 each (by the College). | |
| 4 Scholarships at £25 (by Carmarthenshire). | |
| One Scholarship of £25 | } (by Cardiganshire). |
| One of £15, and one | |
| Exhibition of £10 | |
| One Exhibition of £10 (by Pembrokeshire). | |

- (b) That a further sum of £150 be applied to 12 Scholarships of £12 each to farmers' daughters and others in the county to enable them to take the six weeks' summer course in Dairying. Six pounds to go towards the maintenance of the pupil and £6 to the College for the cost of instruction, cream, milk, etc., tenable by candidates who had already passed the travelling dairy schools.

Twelve candidates were selected out of about 40 candidates for the first course. Cardigan and Pembroke similarly gave six Scholarships of £6 each; 25 in all attended the course, and qualified for the Advanced Certificate, recognised as entitling holders to earn grants as teachers, under the Code (Art. 101 (i) Specific Subjects). The 25 scholars had on an average about 18 cows in their home dairies.

8111 g Five travelling dairy schools were equipped and 12 pupils were instructed for a fortnight at each centre, but such was the demand that the school frequently stayed from four to eight weeks at the same centre. Up to September, 1893, a total of 630 pupils had been admitted to the schools, 584 gaining the Elementary Certificate. County competitions were organised in Pembrokeshire and Radnorshire by farmers' clubs and agricultural societies, limited to pupils who had passed through the travelling schools.

8111 h The extension lectures aimed at improving the quality of butter and increasing the produce of the soil, by introducing modern methods of manuring. In connection with the lectures, field trials on the improvement of pasture were organised on an extensive plan. At one centre, Llandinam, 60 tenants were supplied by the landowner, the late Mr. Edward Davies, with manures for the experiment of improving poor pasture, and in various other centres there was considerable effort made both by landlords and tenants in putting the trials into operation. Experiments were also commenced by the lecturer in agricultural chemistry, also a list of charges to farmers in the affiliated counties was issued for analysis of soils and manures.

8111 i In 1893-94 a further course of two weeks was added to the summer dairy school. It was reported that by now, the prejudice against the new methods shown and explained in the travelling dairy schools had largely disappeared, and that farmers readily acknowledged their helpfulness.

8111 j A dairy school was equipped in four rooms in the basement of the College, for butter-making and for producing six varieties of cheese. After three years' uphill work, technical instruction in dairying was reported to be fully organised in the seven counties. By an arrangement, resulting from a conference of the County Councils' representatives, the lecturer in agricultural chemistry was appointed analyst under the Fertilisers and Feeding Stuffs Act for the seven counties.

In 1894-95 a ten-weeks' theoretical course of instruction in Dairying was added, completing a twenty weeks' course of training for dairy teachers. Ten students joined it.

8111 k Travelling cheese schools, giving ten days' instruction in the centres, were now first started, "the very serious fall in the price of butter having compelled the farmers to turn their minds to cheese-making as a possible source of income," and "were taken up with satisfactory results, and without the slightest opposition from the farmer"; a very different experience from that of the dairy school—"for even now, after years of labour, the country people cannot be persuaded to touch the prime fresh but slightly salted butter made in the schools, although it readily sells at the highest prices in the large towns."

8111 l The manurial demonstrations continued to extend, and suitable permanent seeds, with a proper guarantee, were recommended by the lecturer. These experiments were carried out entirely without aid from the County Councils. In that year also the first six weeks' short course for young farmers was held in the College. That was a very important departure, and I believe that the College was the first in the country to organise short courses of this kind. It is also noteworthy that the young farmers were drawn from so large a range of counties, so that they met one another and were able to discuss agricultural questions among themselves over a wide and varying district.

In the report for 1895-96, a list is given of some 45 landowners and farmers who have devoted from two to ten acres of land to experiments at a cost of from £8 to £40 each. The short course experiment in the previous year is reported to have proved a complete success.

8111 m The Rev. John Owen, assistant lecturer, stated that "these short lectures for young farmers will affect this class very extensively throughout the college district, I should say, will affect it to a far greater extent than the ordinary classes of the college, principally because a greater number of those actually engaged in farming will attend the short course lectures."

8111 n In his report for 1896-97, Mr. Parry gives an interesting account of a visit to Denmark and Sweden, where he was requested to attend a Conference of the British Dairy Association. He calls attention to the fact that the principles of co-operation were carried out

in Denmark and Sweden to an extent unknown among British farmers; to their superiority in the matter of agricultural and technical association; to the system of peasant proprietorship; to the extensive and economically managed butter factories, assisted by the consulting dairy experts appointed by the State and by the staff of the Research Laboratory of the Royal Agricultural and Veterinary College at Copenhagen. The report includes a detailed account of agricultural education in Scandinavia.

The report of that visit was published and distributed amongst the various counties, and it was also published and distributed in Welsh at the expense of the College. I believe the publication of such documents in Welsh as well as in English has had a very considerable effect upon the minds of the farmers in Wales.

In 1897-98 a three-years' course was first arranged for the degree of B.Sc., in Agriculture of the University of Wales.

The travelling dairy schools on the old lines were practically abolished, having served their purpose, the funds formerly devoted to them being now allocated to the advanced dairy school at the College, and to the farmers' short course.

A short course in cookery was also arranged for the holders of the dairy scholarship, part of the course being applied "to the utilising of the fruits, roots, and vegetables growing wild in rural Wales, and to a large extent wasted." A survey of the entire work from June 1891 was added to this year's report, p. 6-13. I will hand that in. It shows the very wide district and the very large number of small village centres at which the work was carried on.

In the College, an advanced short course was now held for the first time, beginning the end of October, and lasting 16 weeks, for the best pupils in the short course; attended by five students, one a county council scholar. Staffordshire and Breconshire for the first time sent scholars to the short course. A reunion took place at its close, and resulted in the formation of the University College of Wales Agricultural Association, which has since held annual meetings and published its proceedings. I have the report for the last two years showing that there are some 250 members belonging to the Association, all of them being short course students.

The College garden proved of great service, being visited by the students once a week in winter, and twice a week or oftener in summer. The sowing, weeding, and thinning of all the crops were done by the students, specimens of varieties of British crops were grown and preserved for classroom use, and a number of small experiments were undertaken, and reports were made on them by the students at the end of the Easter term.

The Agricultural prospectus was rewritten, chiefly in view of the new degree regulations and the alteration in the short courses. In 1898-99 Mr. Middleton resigned the in-College lectureship, when Mr. D. D. Williams succeeded him.

New premises were opened for the use of the Agricultural Department containing separate lecture rooms for agriculture, and a lecture room and laboratory for agricultural chemistry, adjoining the laboratory of the district analyst under the Fertilisers and Feeding Stuffs Act. A conference of the County Councils was summoned, and they appointed the agricultural chemist to be analyst under the Fertilisers Act for the whole district; the object was to make him analyst for the whole area.

8112. Has that worked well?—That has worked well.

8113. It is still in operation?—Yes, and I may say that this year the number of samples is greater than ever, and we are hoping, under the present Fertilisers and Feeding Stuffs Act, that it will still develop. These buildings are in what is called the central block, which cost £15,000, of which at least £3,000 may be set as directly applied for the agricultural subjects. They were built and equipped as the dairy school previously was provided, without any grant from the County Councils.

In May of that year Mr. J. L. Pickard was appointed instructor in horticulture. In July Mr. Murray took a party of students on a visit to Rothamsted, where they were received with much kindness by Sir Henry Gilbert. Several sent accounts of what they saw to Welsh papers. Many members of the Agricultural Association agreed to carry out on their farms field experiments as arranged by Mr. Murray.

Mr. Pickard gave a course of lectures and demonstrations in gardening in Mid-Aeron, including:

(1) Demonstrations to school children in window-gardening, potting, and training plants, &c.

Mr. T. F.
Roberts.

13 June, 1907

Mr. T. F.
Roberts.

13 June, 1907

- gardening, potting, and training plants, &c.
(2) Demonstrations in bee-keeping in the gardens of cottagers.
(3) Garden demonstrations.

Ten lectures were given in the district on such subjects as model cottage and school gardens, roots, crops, leeks, bush fruit, &c.

The chief difficulty found was in finding suitable garden tools—those in use in the district being too old and clumsy.

The Secretary closes his Report of the course by urging the Cardiganshire Technical Instruction Committee "to undertake to provide and maintain a model allotment garden where the instruction may be limited and thorough."

8113d In the report for 1899-1900, in connection with the short courses, the lecturer, Mr. Parry, reports: "There is nothing in Welsh agriculture of to-day so full of promise as the remarkable awakening that has taken place in connection with these classes."

8113e The number of students in attendance during the year was very satisfactory, this result being mainly due to the systematic way in which the extension lectures had been carried to the remotest villages in the various centres. The lectures in horticulture proved successful immediately, and took up the whole time of the lecturer, as they have done ever since.

8113f In 1900-1901, the number of students obtaining distinctions in external examinations was very gratifying, and the work of the advanced short course students received high commendation, Mr. Williams, remarking: "It is surprising how these men apply themselves to the work, and what a vast amount of knowledge they acquire in a few months, when we consider how the intelligence naturally loses force during the long educational gap between school and college. To my mind, this is one of the most successful experiments yet tried by the College."

A suggestion is made in reference to the work of the secondary schools, that a conference of representative headmasters of County schools should be held with a view to seeing what steps might be taken to establish a closer relationship between the Agricultural Department of the College and those schools.

8113g Experiments in the introduction of new varieties of oats, potatoes, swedes, turnips, &c., were arranged for the first time in South Wales. I have here all the published reports of the experiments, which I will hand in. The Agricultural Association received a large accession of numbers, and discussed a plan of co-operation in the purchase of manures and feeding stuffs. It held a successful meeting at Cardiff on the occasion of the Royal Show.

The Director of the Experimental Stations of Canada, Dr. Saunders, visited the College and gave an account of his visit in his report for the year.

8113h The work in horticulture continued to develop, a schoolmasters' summer course being a new and successful feature. As regards the bee-keeping lectures, the absence of a market for honey is remarked as the chief difficulty. It is suggested that the Welsh Industries Association would do well to take the matter up. Pupils of the advanced dairy school held a prominent place in the competitions in local shows, and also in the London Dairy and Royal Shows. There was a very ready sale for all the dairy products, which fetched a higher price than in any previous year.

8113i The Report for 1901-02 records the successful introduction of the new scheme of education adopted by the Council in 1901. The short course, instead of being held in January, was changed to October, and followed by a continuation course held in the Lent term. These two combined counted as the first year of the diploma course, and a third year diploma course was required, the instruction previously given in two years of three terms being now spread over a three years' period of two terms each. Degree students alone continued to study for the three terms of the session.

8113j Mr. Williams adds an instructive Report of a visit paid by him with a deputation of Welsh farmers to Ireland, to investigate the system of co-operation in that country. A visit to the model farm at Glasnevin proved instructive to the members of the first conference held at Aberystwyth in July, 1902, to discuss the question of securing an experimental farm for the College. Mr. Brigstocke, the pioneer of the co-operative movement in Wales, showed his interest at this time in the College by offering three exhibitions of £10 each to students from Cardiganshire, Carmarthenshire, and Pembrokeshire, to take a course of lectures in the principles of co-operation. Mr. Williams, the in-College

lecturer, devoted considerable time to lecturing and addressing local meetings held with a view to forming branch societies. He hoped soon to promote this work still more effectually by training a few Welsh-speaking farmers' sons to carry on this work. It is worthy of note that a short-course student, Mr. Walter Williams, has since become the active organiser of co-operative societies in the district, besides having acted as the assistant of Mr. Loveden Pryse in establishing the Welsh National Agricultural Society, whose large show has been held for the past two years at Aberystwyth.

A list of the Welsh Co-operative Branch Societies is given 8113k in the Report of the Agricultural Organisation Society for 1904, and the President, in his address in the annual meeting for that year, says: "Wales has taken a deep interest in the movement, which has gained a hold on the Principality. In Wales, in the not far-distant future, they would find a brilliant example of the advantages of co-operation as applied to agriculture. Last year the number of centres had risen from 10 to 20," showing in that way the effect of the instruction given by the College, and especially the success of the co-operative movement in Wales.

The instructor in horticulture reports on the great 8113l demand for extension lectures and demonstrations, and specially refers to the great interest taken by schoolmasters in the matter, and the assistance rendered by them in their various districts.

A large increase is reported in the samples analysed 8113m especially from Carmarthenshire, and the analyst made a special arrangement with the Council of that county for analysis of soils with a view to reporting on their manurial requirements.

It may be worth mentioning that a short summer 8113n course in the dyeing of woollen fabrics was held for the first time during this year. The subject has a bearing on the agricultural life of those districts, and the experiment made for a period of some two years under a special grant from the Councils of Cardigan, Carmarthen, and Montgomeryshire proved of much service in calling attention to the process of dyeing, especially in the small factories.

The instructor, Mr. Wilkinson, visited each factory in his district, and made practical suggestions, also giving lectures and practical demonstrations by the aid of the dyeing plant he took with him to the centres, besides holding a short course in the college in the summer.

8114. In what way is dyeing associated with the agricultural industry?—I refer to it because it shows the possibility of promoting accessory industries such as the one in question as part of the scheme of instruction in agricultural areas.

In the report for 1902-03, the year is described by 8114a Mr. Williams as one of the most successful years on record, the numbers attending in various classes being as follows:—

Degree Students		3
Third Year Diploma Students		13
Second Year Diploma and Advanced Short Course		8
First Year Diploma and Continuation Short Course		13
Farmers' Elementary Short Course		38

Out of five successful students in the N.D.A. examination this year, four entered the College as short course students from the farm. They had the language difficulty to encounter, "and are examined in the English system of farming so different to ours with which they can only become acquainted by means of lectures."

As regards co-operation, the strongest supporters of the 8114b movement for its spread are stated to be members of the Agricultural Association.

The report of Mr. Nugent Harris on the work of the two students holding the co-operation exhibition is included.

The late Mr. Hanbury visited the College in December, 8114c 1902. He addressed the students of the Agricultural Association, and spoke on the same day to a large conference on Agricultural Co-operation organised by the College, promising favourable consideration of the application for a grant-in-aid of the proposed Joint College and Counties Experimental Farm.

This project was first mooted by a circular addressed by the Registrar to the affiliated counties in April, 1902, asking them to appoint representatives at a conference to discuss a scheme to secure a farm for the systematic conduct of experiments and investigations.

The absence of a farm was also felt to be a serious obstacle in the further development of the training of the students,

The conference of county council representatives approved the project and the scheme submitted for *pro rata* contributions towards the maintenance and equipment of the farm, the control of which was to be vested in a joint committee, consisting of four representatives of the Council of the College, and of representatives of each contributing council in the following proportions:—Brecon, 2; Cardigan, 2; Carmarthen, 4; Merioneth, 2; Pembroke, 3.

It was found to be a very difficult task for students under the old conditions to attain to the high standard necessary for the diploma.

8115. You finally got a farm of 180 acres at a rental of £200 a year?—Yes.

8116. You still have that farm?—Yes. Two annual reports on the work of the farm have now been issued. These are the two reports. (*Handing in same.*)

8117. Since that time Radnorshire has joined in the scheme?—Yes.

8118. So that you now have six counties?—Yes.

8119a. Then you say something about school gardens?—Yes. In the report for 1902-03 the Instructor in Horticulture referred to the large number of horticultural shows annually held in the district as the result of the classes, and expresses the hope that under the new education authorities some provision will be made for establishing school gardens in all village schools. Practically all schoolmasters are now anxious to take up the work, if only a plot of ground and suitable tools were provided for them. I may quote a short passage from his reports of 1905-06. The instructor in Horticulture remarks on the keen interest in gardening shown by young men, nearly all the prizes at horticultural shows during the year being taken by young men. He adds "it is difficult to realise, and still more difficult to express, the enormously increased use that is made of fruits, vegetables, and salads as foods in mid-Wales during the past five years, especially so in the Towy Valley, the Amman Valley, and in Cardiganshire."

8119b. Commenting on the absence of great increase in school gardens, he says: "Another class of my work, however, nature study, has made wonderful progress. Seven years ago it was rare to find a teacher who either knew or cared anything about wild flowers, or any insects. Interest in and intimate knowledge in these subjects is now become universal, and in nearly every school an attempt is made to collect, classify, and record local flowers, ferns, grasses, and insects. I am assured by school teachers that their scholars take a greater interest in these subjects than in almost any other part of their school work."

8119c. Three students from Glamorgan attended the summer dairy school for the first time in this year 1905-06, and the senior instructress urges that before another year the College authorities should erect a proper dairy. An exhibition was again held at the Aberystwyth National Show. This shows that the work of the dairy school is likely to extend even to Glamorgan for the purposes of agricultural education.

8119d. In the summer of 1906 a special committee of the Council was appointed to consider and report on the working of the Agricultural Department, and in pursuance of recommendations made, a professor of agriculture, Mr. C. Bryner Jones, M.Sc., has recently been appointed to undertake the supervision of its whole work. The further reorganisation necessitated by this change has occupied the attention of the Council during the present year. The new system is to come into operation when the Professor enters on his duties in July. In view of this fact, I do not propose to make any general suggestions as to the future development of the work, but I may point out that the principal requirement is in the direction of increased aid to the advanced work, including that of investigation and research.

8120. Increased aid from what source?—I think the aid to that should come principally from the Board of Agriculture.

8121. You think it is a work of national importance?—Undoubtedly.

8122. You have carried on a certain amount of investigation and research work?—Yes, we have; a certain amount.

8123. The value of the work you have done makes you think that it ought to be extended?—Certainly it does.

8124. Have you formed any opinion as to the form in which that State aid should be given—in the nature of a grant, I suppose?—In the nature of a grant; and it appears to me that it should be in some proportion to the grants made by the local authorities, but I feel pretty strongly,

as the result of our experience that the proportion of the grants in aid from the State should be a very large one to the grants made by the local authorities, on the ground that the county authorities in Wales, and especially in the agricultural districts of Wales, are poor; their resources are limited so that they cannot be expected, in view of the other claims upon them, to contribute towards investigation and research, or towards the higher side of the work in agriculture.

8125. If State assistance were given for this purpose I suppose you would have no objection to the results being to a certain extent the property of the State?—No objection whatever.

8126. That is to say that the Board of Agriculture, or whichever public authority had the control would be entitled to any benefits which you acquired?—No objection at all; we should welcome that. In order to show the importance of a large proportion of aid from the State to the higher work I may mention that the County Council grants that we have received have been absolutely limited, with the exception of the grants to the College farm, to work of direct use to the respective counties, that is, either to lectures and demonstrations in the counties, or to paying the fees and part-maintenance of students in the short courses and dairy courses.

8127. That would be in the nature of scholarships or bursaries, would it not?—Undoubtedly, but they are given to the elementary parts of the work. The local authorities have hitherto shown some reluctance in giving scholarships for the more advanced part of the instruction given in the College, the reason being that a larger number of students participate in the small grants and the benefits are more apparent to the inhabitants of the county itself; and also it has been alleged by members of the different County Councils that if they subsidise students to pursue an advanced course of instruction in agriculture, those students are liable not to return to the county or not to return to the farms.

8128. There is no hostility, then—in fact, I think from what we know of Wales they are not likely to be hostile—to the development of knowledge on such a subject, but merely because they think that such knowledge is not going to benefit those counties?—Entirely—not going to benefit the locality. They are keenly interested in the development of higher instruction in agriculture, but they do not think it has a local claim on the several funds of the counties. Scholarships for the two years' course offered by the counties were soon discontinued, and ever since the grants under this head have gone to the popular short courses. A large provision is needed for scholarships enabling qualified students to take the degree course and after graduating, to continue in residence for research, an object which should be promoted principally at the expense of the State, in order to enable the colleges to provide teachers qualified not only to teach but also to undertake the direction of investigation, and to provide a supply of post-graduate students to whom scholarships covering the bare cost of sustenance should be given while they are engaged in this work, and can show satisfactory evidence of progress. In view of the limited resources at the disposal of these counties, which together form one of the most important agricultural areas in the Kingdom, and in view of the heavy charges in respect of secondary and primary education which they have to meet, the proportion of aid to higher agricultural education from the State to that borne locally should, in my opinion, be not less than two-thirds to one-third, or some such proportion. Such a proportion is justified also by economic and social considerations of great importance in their bearing on the country as a whole and the great centres of population.

8129. I suppose the number of students who would be likely to take a degree would never be very large?—It has hitherto been small.

8130. But at the same time it is of considerable value?—Yes. It is from that class that the real experts in agricultural science are drawn, that the teachers of the country are supplied, and also that all expert knowledge is available for the development of agriculture.

8131. Do any of your students become teachers in the colonies or in foreign countries?—We have not had any as yet who have gone.

8132. What class of students are they who take the diploma course? What becomes of them—do they become practical farmers?—They come, as I said, chiefly from the farms to the short courses and then they mainly return to the farms, but some of them have obtained such positions as those of lecturers and dairy factory managers;

Mr. T. F.
Roberts.
13 June, 1907

Mr T. F. Roberts. for instance, three of them, I believe, have been appointed lecturers in a college similar to our own, and there are other instances of the same kind.

13 June, 1907

8133. Now as to the finance, because you have touched very largely on finance, can you very briefly state the sources from which the funds for this department are derived. First of all there is the Government grant?—Yes, there is the Government grant and in addition to that there are the grants of the County Councils.

8134. Have you any endowments of any sort—you mentioned a legacy of £5,000 towards a chair of chemistry?—We have only some £15,000 in the way of endowment altogether.

8135. Do you receive any fees?—We receive fees from the students; for example the fees for this year from the students amount to about £260; it is not a large amount.

8136. Do they pay them out of their own pockets or from scholarships given by the County Council?—They pay them very largely from scholarships given them.

8137. What does it cost a student to live at Aberystwyth?—A student living there a whole year would be able to do it for some £40, or even less with economy.

8138. It is scarcely fair, I think, to ask you to give information as to the more practical management, and perhaps under the circumstances, as changes are contemplated, it will hardly be necessary, but I do not know whether you have any opinions at all on the result of the local lectures which have been given?—I think there is no doubt that they have had the very greatest effect in changing the opinion of the farmers and making it favourable to scientific agriculture, and especially the young farmers have been deeply influenced by them, so that I think we may reckon throughout the whole of the district the young farmers are enthusiastic on behalf of the scientific developments of agriculture.

8139. The farms in the main are small, I suppose?—They are.

8140. Are they chiefly mountain farms in your district?—Chiefly.

8141. You know nothing about the College farm, I suppose—you do not know what the stock is on the farm, do you?—I am afraid I could not tell you that, but my co-witness, Mr. Jones-Davies, will be able to speak on that point.

8142. Perhaps he can tell us about the feeding experiments too?—Yes, I think he can tell you about those.

8143. (*By Lord Moreton.*) You mentioned just now that several outside lectures had been given in Welsh and also that Professor Tanner's Primer had been translated into Welsh. Is it a *sine qua non* that your professors should speak Welsh?—It is practically so, that is to say we must have a majority of the staff of the department able to speak Welsh.

8144. Do you find that the fact of Welsh being necessary rather limits your choice of teachers?—I think in some degree it has done so. At the same time up to the present we have not allowed the need, great as it is, of Welsh instructors to induce us to appoint teachers manifestly inferior in other respects. We have preferred Welsh applicants only where the merits seemed to be approximately equal.

8145. Do you do anything with regard to teaching forestry?—We have done nothing so far; there have been courses given in the College for in-college students.

8146. You have not taken it up seriously as part of the curriculum?—We have not done so as yet.

8147. You mentioned a little while back the examination for the National Diploma in Agriculture, up for which, I know, from time to time you send pupils. Do you think it would be an improvement if instead of that diploma examination being held in one centre in England it could be held in various centres in England and Wales, and if that examination could be made of rather a more practical form—by that I mean that the examination might be held on a farm, possibly a college farm, and that a great deal of the examination should be held out of doors not only in agricultural but possibly in matters of science affecting agriculture. Would that be an improvement in your opinion?—So far as I can judge I think it would be an improvement. I think it would be an improvement particularly to have it held at various centres because it would enable the students to bring their knowledge of agriculture in those particular parts of the country more fully to bear I should hope.

8148. If such an examination were held in a Welsh centre am I to think that the examination would have to

be held in Welsh to make it absolutely fair?—I do not think that would be necessary.

8149. (*By Mr. Latham.*) Just describe shortly what your agricultural part of the College is?—There is a professor of agriculture, a lecturer in agriculture, and an assistant lecturer in agriculture; then there is a lecturer also in agricultural chemistry; there are instructresses in dairying, butter and cheese-making, and there is an instructor in horticulture. I think those are the members of the agricultural staff. Then as regards the equipment and buildings there is the College farm about four miles away, which is under a director who is one of the members of the College staff, now the professor of agriculture, and a bailiff. Then in the College there is a special laboratory for agricultural chemistry, and there is the laboratory of the analyst under the Fertilisers and Feeding Stuffs Act close by, so that the students are able to see analyses going on. There are various lecture rooms for the agricultural students, and in the basement of the College there is a large dairy equipped for butter and cheese-making.

8150. What time do you expect the students to spend at this farm?—I believe the practice hitherto is that they are taken over two afternoons a week during the two winter terms. It is the intention that students who have not been on farms before entering the College should spend four months a year on the farm.

8151. How long does that course last?—The course for the diploma lasts three years and the course for the degree also lasts three years.

8152. Are the County Councils of the several counties adjoining in close touch with the College?—They are in the closest touch. I have here a list of the grants they have made to the College covering a period of years and I have also a list of the grants that they have made to the farm within the last two years.

8153. May we take it that these figures are figures showing what you have received from the six counties. Does Radnor help you at all?—Radnor helps us for the farm now; it contributes in that way; it has done very little otherwise. For a number of years it gave nothing; it is a very small county, as you know, and I believe they found it difficult to give anything.

8154. Almost all these counties rose a little at one time in their contributions, but they are now going back considerably?—Yes, I am glad to have the opportunity of mentioning that; that has been due largely to the changes resulting from the Education Act of 1902; for instance, there is a reduction of £300 in the grant from Carmarthenshire, which is due to the altered circumstances created by the changes made by that Act.

8155. Do these counties all offer scholarships to your College?—The majority of them offer scholarships to the short courses to which I have referred.

8156. I thought the scholarships were of such very small value. Are they of any increased value now?—The scholarships for the short courses have been of considerable value considering the time the student has to spend at the College.

8157. How long is that?—The short course is seven weeks, and the advanced short course is 16 weeks.

8158. What are the scholarships?—The scholarships for the short course would vary from £6 to £10; that includes a grant towards the maintenance and the payment of the fees for the course to the College.

8159. How is the rest made up?—By the student himself from his own resources.

8160. Are the students sons of men of large means or small means?—In the great majority of cases they are sons of small peasant farmers.

8161. Do you find the sons of the larger farmers are anxious to join the College?—Yes; we find that even the large farmers are desirous that their sons should get these scholarships. It is one ground of criticism I think that a considerable number of farmers who could afford to send their sons without receiving any grant in aid receive grants in aid from the county authorities, but I think it may be taken that in the great majority of cases the parents of the young farmers are poor in circumstances.

8162. Is this agricultural teaching looked upon by the farmers of Wales with great favour?—With great favour. There has been a marked change in that respect since the work has been going on.

8163. Are there more students applying to come to the College than you have the opportunity of taking?—

No, I cannot say that, but I believe that that will be the case more in future. We have in Wales a system of intermediate schools which has been at work for some years and is likely to equip and prepare an increasing number of pupils, every year, who will require advanced agricultural education.

8164. In almost the last remark in your *précis* you say, "A large provision is needed for scholarships enabling qualified students to take the Degree Course, and after graduating, to continue in residence for research, an object which should be promoted principally at the expense of the State, in order to enable the colleges to provide teachers," and so on. You think there are more students wishing to come than there are scholarships to allow them to come?—Yes. There are very few scholarships, in fact hardly any at all given for the most difficult course, the Degree Course, and I think if scholarships were offered for that course it would enable a great many more students to pursue it.

8165. Can you tell us anything about the experiments that have been carried on by the department?—I am sorry I cannot do that. All I can do in that connection is simply to hand in the reports of the experiments that have been carried out.

8166. I suppose the same remark applies to your dairy school?—Yes.

8167. You say, "The proportion of aid to higher agricultural education from the State to that borne locally should in my opinion not be less than two-thirds." Is not that rather high?—It does not seem to me too high when you consider the circumstances of the counties with which we are connected. They are purely agricultural counties with the exception of Carmarthenshire, which has also a considerable mining element, and they have very heavy charges already in respect of education upon them; so that I think the proportion of two-thirds from the State for higher agricultural education would be about a just one.

8168. Considering the enormous amount of money taken from the ratepayers for elementary education—does that qualify that remark?—No, I think it only goes to justify it, that if the local ratepayers are heavily burdened for education that there is good reason to follow the example of other countries in promoting the higher branches of instruction and investigation through the State from the central exchequer.

8169. Is it fair to take it that the large majority of the ratepayers in your counties are agriculturists?—They are.

8170. Would not the larger farmers be able to bear a third if the County Councils bore a third and the State the other third?—I fear not; I fear that the higher education in agriculture would suffer if it were attempted to carry it on by means of such a large proportion locally borne.

8171. (*By Professor Middleton.*) Your opinion is that the duty of promoting higher education should be work for the State as apart from the local authorities?—Yes, that is my opinion broadly.

8172. Could you justify the State's action in this respect by the effects of investigation and research upon the lower grade education. You would consider, I suppose, that the lower and general types of education would not be satisfactory unless they were associated with some means for providing fresh knowledge?—Entirely so. I think the efficiency of all grades of education very largely depends upon its being related to a very efficient provision for the highest grade of education both for teaching and for investigating.

8173. That higher type of work which you referred to just now acts upon the lower grade, I think you will agree with me, by promoting a desire for knowledge, that is to say, unless you provide new types of knowledge you will not get the desire for knowledge continued in the lower grades of education?—Yes, I believe that to be so. I believe that knowledge is apt to become mechanical and to lose interest unless it is fed continually by those who are acquiring fresh knowledge for themselves and in actual contact with new problems.

8174. That is why it becomes the duty of the State to provide for research and investigation?—Yes, I think that is one of the chief grounds for that duty.

8175. You have told us that you have had in Wales a number of students attending your short courses. The elementary short course I think you said is attended by from perhaps 30 up to about 50 students per annum?—Yes. I have handed in a list of the numbers attending year by year—it is from about 30 to 50.

8176. So that a number of the farmers who are now farming in Wales have been to the University College at Aberystwyth?—Yes, the great mass of young farmers in the counties have been actually in the College for these short periods of seven or eight weeks and in that way have been in actual contact themselves with the life of the College and have seen the laboratories to some extent and the work that is done there, and I think that has had a surprising effect in their attitude towards the scientific side of their calling.

8177. In your College Agricultural Association you have something like 250 members?—Approximately.

8178. Practically everyone of whom is a young Welsh farmer?—Yes.

8179. Everyone of whom has spent some part of his time in the University College?—That is so.

8180. Is it not the case that a number of these young men carry out field experiments with manures in connection with the College?—Yes, about 60 members of the Agricultural Association, that is, former short-course students, were engaged in one year in carrying out experiments.

8181. Your Society also has annual meetings at Aberystwyth and you invite agriculturists and others from a distance to read papers before the Society?—Yes, they are generally addressed by some well-known agriculturist, or more than one, during the annual meetings which take place in December.

8182. Your main object in your Agricultural Association is to maintain a permanent link between the College and the young farmers in Wales?—That is the main object.

8183. I think we may say that up to the present time you have been remarkably successful in that respect?—Exceedingly successful. I do not think we should ever have been able to establish the College farm in the way we did but for the fact that these young farmers in each of the counties were keen supporters of it and were able to convince the local authorities that it was worth the while of the counties to contribute to such a scheme.

8184. Have these short-course students been through your intermediate schools?—Very few of them.

8185. Have many of them been at evening continuation schools?—I should think that a large proportion of them would have attended evening schools in some form or other, but there is a considerable dearth of evening schools in the rural districts of Wales.

8186. Do you think that the intermediate schools may have an indirect effect upon the short-course students?—Yes, undoubtedly. We find of late years that an increasing proportion of the short-course students have been to the intermediate schools, and that therefore they are better equipped, but in the main it is still the case that the majority have not been to the intermediate schools.

8187. You told us, I think, that you had not received much in the way of legacies or donations actually for the agricultural department; but is it not the case that the agricultural department at Aberystwyth has very greatly benefited by donations and grants for the erection, say, of such buildings as the chemical laboratory?—Indirectly in the greatest degree; for instance, at the present time we are building very large chemical laboratories which have been provided by the members of the family of a member of this committee at an expense (inclusive of cost of site, &c., borne by the College) of £25,000, and I may say that one of the principal purposes of these laboratories is to make provision for scientific investigation in matters relating to agriculture, that being regarded as the chief industrial direction in which the College can help.

8188. Is it not the case, too, that the agricultural buildings which you erected were very largely provided by the Welsh people?—There was a grant from the State made of £10,000 at the time towards the building, but to meet that grant some £5,700 were contributed voluntarily in about six months in response to the condition attached to the building grant. I may mention that the buildings of the College as a whole have cost some £100,000, roughly estimating the cost, and that out of that we have not received any grants from the State or from any public authorities except the £10,000 to which I referred, so that the buildings as a whole may be said to have been provided by voluntary aid.

8189. (*By Mr. Medd.*) You have, I think, seven counties affiliated to you, have you not?—We have.

8190. The reason why Radnorshire has not recently given much is that it has only become affiliated within the

Mr. T. F.
Roberts.
13 June, 1907

Mr. T. F.
Roberts.
13 June, 1907

last year or two ?—It has been affiliated from the beginning, but being a small and poor county it made no contribution for a considerable number of years ; it made small grants at first, and then within the last two or three years it has again made grants towards the farm.

8191. Up till the last year or two it had no definite connection with you ?—No actual connection.

8192. Have you heard any objection as to the affiliation of Montgomeryshire and Merionethshire to you with regard to the difficulty that arises geographically through people who live in one part of the county having to get to Bangor and so on ?—No, I cannot say that I have heard much objection.

8193. One of our witnesses here, an important witness, suggested that the northern half of Merionethshire might appropriately now go to Bangor, and Montgomeryshire might come more to you. You divide Montgomeryshire as it is, do you not ?—Yes ; at present we have the western and southern portion of Montgomery because the University College of North Wales commenced agricultural education before we did, and were at work there before our department was established.

8194. Do you find any difficulty arise from the fact that you have a half county—any difficulty in the local administration ?—I think there are certain difficulties that arise, and I must say that I should not be willing to see Merionethshire broken up between two authorities because I think it is very much more advantageous to work the agricultural education of a county as a whole from one centre than to divide it. Of course, I make no objection in the case of Montgomery because that was the state of things when we started.

8195. Montgomery is a large county, I suppose ?—Yes.

8196. You could hardly take the whole of it without depriving Bangor of a very considerable area ; that is what it would amount to ?—Yes. That division we accept as the result of circumstances that were in existence before the department was established at Aberystwyth.

8197. Do you do much work in these affiliated counties ? It will facilitate your answer if you look at the Board of Agriculture Report. (*Handing same.*) I see there is practically nothing in Breconshire ?—Breconshire, I think, has never contributed more than £100 a year to agricultural education.

8198. Then you feel no obligation to a county unless that county makes a substantial contribution to you ?—No, there is no obligation ; that is, we have no right to enter the county except as we are called in by the local authority to do certain work.

8199. Are you not, as a collegiate centre, holding yourself out as more or less responsible for the agricultural education of that area ?—Certainly ; that is part of the duties assigned to us by our Charter, to promote agricultural and technical education.

8200. That is what I understood. In so far as you exist as a collegiate centre we in England look to you to make yourself responsible for the counties affiliated to you ?—Yes, absolutely so.

8201. Now, if you will look at Cardiganshire, that comes next—it is on page 177 ?—Yes.

8202. I do not think there is anything done in Cardiganshire ?—On the contrary, there is a very great deal of work done in Cardiganshire.

8203. Of what nature ?—Cardiganshire is, I think, one of the best organised counties in Wales for this purpose. The work we have done there has been in the nature of local lectures, extension lectures in agriculture and in horticulture, in the form of scholarships given to young farmers to attend the short courses, and to the daughters of farmers to attend the advanced dairy school.

8204. In other words, a good many of your short course students come from Cardiganshire ?—A good number.

8205. But you have no classes in the county itself on any of these subjects contained in this list ?—We have the local extension classes simply.

8206. How is it they are not described here ? Page 157 begins at dairying, and down to the training of elementary school teachers it is a complete blank ?—To take the training of elementary school teachers, for example, there are always courses at the College in the summer for teachers, and they are attended chiefly by teachers from Cardiganshire, I should say.

8207. Have you any idea who furnished this report ?—I could not say.

8208. Because this must be obviously inaccurate ?—Our College reports each year which are sent to the county authorities would show at once that there is a very great deal of work done in Cardiganshire under several of those heads, and the same is true of Carmarthenshire. In the other counties the work done is much less because the grant given in each case is small. In Breconshire it has not been more than £100 in any year, so that the work we do in the county is limited to the work that can be done for such a small grant as that.

8209. I am very glad indeed to find that there is more work done than would appear from this Report. My object is to see whether you cannot annually draw up a scheme for the whole of this area dealing with varying grades of education in agriculture ?—I should certainly think that that could be done. Our present plan is to send to the County Councils at a certain time of the year in April or May a list of the types of work that we are prepared to carry on. Then they reply to us some time before June or July possibly in some cases, stating for how much work and under what heads they are prepared to give grants.

8210. They apply to you if they want any particular kind of lectures or any particular kind of instruction ?—Yes.

8211. But one cannot help feeling that a meeting held annually to discuss the particular requirements of each county, the facilities that each county offers, and then to tabulate, if you can, regular grades of education from the elementary school upwards, working finally to your College at Aberystwyth, would be desirable ?—Yes.

8212. What one feels is this, is it not, that in the majority of cases nothing is done between the elementary school and such an institution as yours ; there are occasional lectures, and there are some field experiments, but for the lads of 16 or 17 practically little is done ; there is nothing in the nature of intermediate education ?—I may say that the question of making the intermediate education more directly useful to agriculture and to farmers is engaging a good deal of attention in some of our counties at the present time, and the question is being carefully considered whether it is advisable in the upper standards of the intermediate schools to introduce some specific instruction in agriculture or in direct agricultural subjects.

8213. Probably you would not find that succeed, but it might be possible to organise an intermediate school as good as your other intermediate schools which would be devoted entirely to agriculture ?—Yes ; that is one of the alternative plans suggested, I may say, for meeting the problem.

8214. That is under consideration ?—Yes, in the various counties.

8215. There has been a proposal of the kind at St. Asaph, I think ?—Yes, I have heard of such a proposal.

8216. Do you not agree with me that your institute as an institute of the highest grade would fulfil a more useful function if it did provide for all these varying classes, that is to say, give them permanent institutions and not provide them merely with spasmodic lectures ?—Yes, undoubtedly it would be if the provision were made more continuous and systematic and extended from the elementary schools by a well-considered plan up to the university.

8217. It is a question which is already under consideration, and one which I hope you will consider more fully ?—The further development of the work that we have done in the counties is a matter that will receive the very fullest consideration. I may say that I have not entered into it because I do not think it is wise that I should do so, seeing that a new professor has been appointed who is about to enter upon his work, but I can assure the Committee that that is one of the principal matters that will engage the attention of the College.

8218. You mentioned, of course, your desire for further financial aid. Do not you think that you would establish your claim upon the country if you could provide and maintain these varying grades of institution ?—Yes, I think there are two main grounds upon which our claim for aid is based. First of all, the provision of the highest instruction and the development of investigation, and secondly the development of a system of agricultural education under the guidance of the College for the whole of this particular area, and the making of the College a central intelligence bureau for all questions in the area relating to scientific agriculture.

8219. That is exactly what I mean, and of course you are already doing something with regard to the training

of elementary school teachers?—We are. We have a large day training department connected with the College.

8220. I meant rather the training of elementary teachers in rural subjects?—Yes, we are already doing something in that direction, and I believe that in future we shall do a great deal more.

8221. That is capable of extension?—That is capable of great extension.

8222. (*By Mr. Latham.*) I do not think anyone has asked you to tell us what you do in horticulture?—In horticulture we have an instructor, a very capable man, who devotes the whole of his time to the work, and who lectures and conducts demonstrations at village centres in the various counties, and when he lectures in the district he spends a considerable part of his time in the elementary school. He shows the teachers where to establish school gardens, and interests them in nature study and so on, and in that way he has done undoubtedly an immense amount of valuable work during the past seven or eight years. The difficulty so far has been that the county authorities have not seen their way to establish school gardens in connection with the schools. The lecturer has been urging that upon them, and he has issued a list which he has sent to the county authorities of schools which are suitable for an experiment to be made in that direction because the head teachers are keenly interested in the subject. Up to the present time, however, the county authorities have not taken actual steps; but although the school gardens are not established upon an organised plan a very great deal of work is being done in the elementary schools as the result of the instruction given by this instructor to whom I am referring.

8223. Is any portion of this farm set on one side for tree planting and that sort of thing?—There is a portion of the farm that is set apart for a large garden, and I may say we have also, on another piece of ground, which belongs to the College, an orchard. I do not know whether we shall continue that; we may, now that we have got a farm, concentrate that work in the College farm, but when the orchard was formed there were about 500 trees laid down in it, and they were laid down by the students then in attendance, and by schoolmasters who were attending a short course in horticulture in the College at the time. That shows you the kind of beginning that we have made in that direction.

8224. Are there any scholarships covering maintenance? Do they lodge in the College or do they go backwards and forwards to their homes? Is there any hostel?—The men students are in lodgings entirely; there is no hostel applying to the agricultural men students. The young women who attend the advanced dairy school remain in one house, where they are under the supervision of the instructress.

8225. That would be a hostel or something of that sort?—A sort of hostel.

8226. That is to say, they are all under superintendence?—The young women in that way are under superintendence while they are in the College.

8227. (*By Professor Middleton.*) You referred incidentally to your degree course being adapted for training agricultural experts; it is not really intended for farmers and land agents so much as for the agricultural chemist and the agricultural botanist, and so on?—Principally for those.

8228. What length of time is occupied in the degree course as a rule?—The minimum course is three years.

8229. What amount of science enters into this course for the degree in agriculture?—A very considerable amount. I should say between half and two-thirds consists in pure science, theoretical and practical science.

8230. I see on looking at the calendar that you require a student to take the final courses in no less than three subjects?—In three subjects.

8231. At least three subjects?—Yes.

8232. Two of them must be pure science subjects?—Yes, two of them are pure science subjects.

8233. In comparing this course with some of the other courses for a degree, it seems to me you require more work from the agricultural student than you do from students in some of the other divisions?—The student who takes the ordinary B.Sc. may take, for instance, physics and chemistry; he must take two branches, physics, *plus* inorganic and organic chemistry.

8234. So that the agricultural student would take in the place of physics a subject which you call agricultural

science?—He would. We have tried to introduce into the degree a really high standard of scientific training.

8235. (*By Lord Barnard.*) I suppose your school is open to the whole world, and is not limited to Welshmen?—It is not limited at all.

8236. Do you have any students from other parts of England?—We have. We have about 100 students from England at the present time out of our total of about 450 students.

8237. You have about 450 students?—About four hundred and fifty regular students; the present number is 429.

8238. Do they live in lodgings or in hostels?—The men students live in lodgings, and the women students live in a hostel called Alexandra Hall.

8239. Do outside students pay higher fees than Welsh students?—No, they pay precisely the same fees. The fees are quoted in the Calendar of the College which I have put in.

8240. Do you keep a separate account of the receipts and expenses in connection with your agricultural farm?—We do. The Farm Report shows the balance-sheet of the farm and the Calendar that of the department.

8241. It is entirely under the control of this committee which you have already spoken of?—The Agricultural Committee to which I referred is not the Executive Committee of the Agricultural Department.

8242. Then who manages the agricultural department?—That committee is a consultative committee which meets some four or five times a year. The actual executive committee in the hands of which the management of the agricultural department rests is the Council of the College. The Council therefore is largely representative of these seven counties. We make it our aim to get representatives of each of the seven counties to be members of the Council.

8243. What I want to ascertain is this, whether the County Councils are perfectly familiar through their representatives, or through somebody or another, with the finance and everything connected with it?—Yes, I believe they are familiar with it.

8244. They have a voice in the management?—They have a voice in the management, and I might add that the farm is managed by a committee directly representative of the County Councils.

8245. Have you any experience or strong opinions on the subject of the training of elementary school teachers?—I have formed a general opinion.

8246. Do you have many of them at your College?—Yes, we have a large training department there.

8247. It has been suggested to this Committee that it would be very desirable if the training of elementary school teachers included, particularly in the case of those who are going to become teachers in rural districts—which I suppose would be very largely the case in Wales?—Undoubtedly.

8248. —Rural subjects or subjects connected with rural life. Do you think that is practicable?—I think it is practicable to a considerable extent that the model lessons that they give during their course of training should be made to bear largely upon rural subjects, but I think the object has to be promoted chiefly through the scientific training that is given to the students. Speaking in reference to our own College, for example, we require that all students received into the training department should matriculate in the University of Wales before they enter; that means that they are students fully qualified to pursue a full course of study for a degree, and a considerable number of them qualify for the degree of Bachelor of Science. Those students spend the great bulk of their time upon scientific study, theoretical and practical, and I think the general discipline that they get in that way makes them qualified in the best sense to introduce into the school work, when they enter into their work as teachers, a very large amount of attention to rural subjects. On the other hand, a large number of the students prepare for the degree of B.A., which means a degree containing subjects of language, history and literature, and it is for these students that I think a very considerable amount of nature study, information in regard to subjects such as horticulture and other subjects bearing upon agriculture, should be introduced during their course of training as part of the training they receive in the art of teaching.

Mr. T. F.
Roberts.

13 June, 1907

Mr. HENRY JONES-DAVIES, called and examined.

Mr. H.
Jones-Davies
13 June, 1907

8249. (By Lord Barnard.) You were formerly Chairman of the Carmarthenshire County Council, and you are also ex-Chairman of its County Education Committee?—Yes.

8250. How long is it since you held those offices?—I was Chairman of the County Council in the year 1902 and Chairman of the Education Committee last year.

8251. Only for one year?—No; I was Chairman of the Education Committee for two years.

8252. Are you an agriculturist yourself—have you a farm?—Yes, I have a farm of 75 acres, a freehold farm.

8253. You come into contact with farmers?—Yes, with every class of farmer in the county of Carmarthen.

8254. What is the opinion of the farmers in the county of Carmarthen as to the work which has been done by the University College of Wales?—They look upon it very favourably.

8255. Have they done that from the beginning or were they at all sceptical at first?—I think perhaps if I might be allowed to read my statement, it would answer that.

8256. By all means.—I will summarise it as much as possible.

8256a The starting-point of higher agricultural education in the county is traced to the passing of the Technical Instruction Act, 1889. The Technical Instruction Act gave the farmer the first opportunity. Until the passing of that Act and the Welsh Intermediate Education Act, the facilities for obtaining agricultural education were very meagre indeed, not to say inadequate. The resources of the farming community and the nature of the provision were such that they were wholly confined to the upper and middle classes. The Acts cited threw open the floodgates to agricultural education, which have by this time swept away many a prejudicial barrier.

Wales could not lay claim to any facilities in this respect except over the border and beyond the reach of the Welsh farmer, should he feel disposed to gain that knowledge. The Technical Instruction Acts gave him the first real opportunity. Prior to this the only opportunities he had of enlarging his knowledge, except by his own minute observations, were those scantily afforded by shows, farmers' clubs, competitions, in connection with some agricultural society, and more often by copying some system adopted by the most enlightened and progressive agriculturist in the neighbourhood. Many an enterprising farmer has been a benefactor to his locality and pioneers of agriculture in their respective districts, whom the whole countryside had full confidence in, and whose progressive methods they readily adopted.

8256b Though the Technical Instruction Act was passed in 1889 the first rate of 1d. in the £ was not levied till the financial year 1891-2. In 1892, I think, we first had the benefit of the guidance of the Aberystwyth College authorities. Extension lectures were delivered and travelling dairy schools established. These were the heralding of a new era of higher instruction in agriculture brought to the home and everyday life of the farmer. The lectures were, and are still delivered, in the vernacular. The lectures and dairy schools were well attended, not perhaps for the sake of the instruction given, but in the main for the curiosity of hearing how farming was to be made more remunerative by a college professor. The large majority did not take kindly to the new gospel. Some meditated and reflected. Reflections thus started soon landed them in more open-mindedness, with the result of giving a fair trial to the suggestions of the lecturer.

8256c Travelling dairy schools were inaugurated about the same time. Plenty of pupils were forthcoming. In some cases those that were prepared to continue the new practice would not be allowed to carry out what they had accomplished at the school on account of the unexampled fidelity to old customs and traditions at home. Travelling dairy schools have been most popular in the county, being located in some centres for even six or eight weeks. About 1,200 pupils have passed through these schools and 88 per cent. have gained certificates.

8256d Then in the year 1893, 12 scholarships, the result of the systematic instruction now afforded at the College, were awarded for an advanced course in dairying for six weeks and distributed throughout the county according to unions. Thus they have been distributed to this day so

that every part of the county gets its quota. The number of scholarships have subsequent to this been increased to 18 but again reduced to the original number, as well as extension lectures and travelling dairy schools, on account of financial considerations.

The applicants for dairy scholarships increased from year to year until in one year there were as many as 140 applicants. Two scholarships are in turn offered to the best two pupils in the advanced course to proceed to the diploma course.

In 1896, 12 young men were selected for the short courses for farmers' sons who intended to follow the pursuits of agriculture and were afterwards increased to 18 per year and now reduced to 12, the two best in each batch being allowed to proceed for the advanced course. Should there be a candidate of outstanding merit and of restricted means, the Education Committee is ready to assist him for the diploma course.

8256e But to-day there is not a corner of the county that you will not find a number of young men and women who have had this training in agriculture. Undeveloped resources and intellect have been tapped. The results from those students may not yet be fully appreciated by the ordinary onlooker, for in many instances after their return home their parents may be averse to new notions, through being prejudiced. It gives them an insight to a larger sphere by coming in contact with pupils from other counties with other views, manners and customs. They are thus able to obtain a glimpse far outside their usual environment. They become permeated with a desire and a yearning for more learning and culture and to take a pride in their avocation. It is working a silent revolution. Anyone with a prophetic eye will grasp the import of the situation and be assured that it must act beneficially with the coming generation of farmers. Through their little training they have been shewn how useful is the knowledge received, and in the upbringing of their families, they will take care that their children shall not be handicapped as they were through lack of instruction. That is a foundation for the future of agricultural education. There will be an alert and an enlightened public opinion on education and its functions in regard to agricultural and rural life. It will be a great advantage in moulding the character of those who will in time take their share in the keen and severe struggle of modern agricultural life.

It has given them a new hope, a new interest and a new knowledge.

8256f Then, with regard to the analyses of feeding stuffs, manures, soils and seeds, under the Fertilisers and Feeding-Substances Act of 1893, the County Council came to an understanding with Aberystwyth College to pay half the fee and the sender of the sample the other half.

8257. I do not think you need trouble with regard to the Fertilisers and Feeding Substances Act except, I will just ask you very shortly, the College has arranged to do work under the Act, as Principal Roberts has told us?—Yes.

8258. Some reference was made by Mr. Latham in asking questions of Principal Roberts as to large farmers. I fancy large farmers are very rare in Wales?—Very rare in Carmarthenshire and Wales generally. I think, according to the last report, the average is 50 acres.

8259. Yes, there are 3,000 holdings between 50 and 300 acres, and only 57 farmers in the County of Carmarthen of over 300 acres. Of course we must not confuse farmers in Wales with large farmers in the Midland counties in England, for example?—No; and the conditions also are totally dissimilar.

8260. A very large number of the farmers also are what are called working farmers, that is to say they work on their farms themselves a great deal—they and their families?—They do.

8261. There is not a large number of farm labourers, I presume?—Of course we have a large number of small holders of from five up to 10 acres; they would have some subsidiary occupation as well.

8262. Where does the Welsh farmer send his boys to be educated?—First to the elementary school. Some send them to the intermediate school. They receive bursaries under the intermediate education system in Wales, but we

have many instances of scholarships to the short courses at the College, young men and women.

8263. If a farmer wishes his son to have special instruction he sends him to Aberystwyth?—He does; we have practically covered the county.

8264. By means of scholarships given by the County Council?—Yes.

8265. You have, in your opinion, dealt with the subject satisfactorily in Carmarthen?—Yes, because we have distributed the scholarships so many for each union, so that every part of the county should have its share, and we have made no discrimination between the sons of small farmers and the sons of large farmers.

8266. At what age do these boys go for the short courses?—They are not allowed to go under 16.

8267. Before that age they have probably been working for their fathers on their farms?—Yes, after leaving the elementary school.

8268. You consider that a good plan?—Yes, but there should be some means of instruction so that the gap between 13 and 16 should be filled.

8269. You have something to say on the subject of instruction in horticulture?—Yes. Horticulture, which may be taken as a subsidiary branch of agriculture, has been provided for. Lectures are delivered in horticulture at various centres throughout the county. Applications were sent in by the parish councils and so many allotted to each union. The lectures are very popular and well attended. Short course scholarships, varying from 10 to 20 in number, are offered to elementary teachers, subject to their teaching horticulture as a grant-earning subject. This course has given a great impetus to school gardens and nature study. I have brought with me here specimens of the posters that we exhibit throughout the county asking if there are any applications for these courses and scholarships. (*Handing same in*).

8270. Have any elementary school gardens been established?—Only one has been established in the county, but there are instances of this kind, that where the house and garden are attached to the school, the teacher generally takes the pupils to his own garden and does nature study. I can give you an instance which was brought about simply through this method of giving lectures in horticulture in the county. One elementary school teacher at Llandarrog, a centre which was visited some years ago, told me the other day that before we had this system of horticultural instruction in the county he took no interest in horticulture or nature study, but that now he had taken it up, and last year, he further told me, his children collected no less than 350 different plants and wild flowers, and so forth, in the nature study line.

8271. Next you mention experimental plots and the experimental farm?—Yes. Experiments are carried on over the affiliated counties for years on different crops and the results tabulated, printed and circulated. They create a large amount of interest and are undoubtedly most useful in their particular districts. In 1901 I addressed the Carmarthenshire Chamber of Agriculture on "Agricultural Education" and suggested the establishment of an experimental farm for the counties of Carmarthen, Cardigan and Pembroke. At the end of the discussion, it was unanimously resolved to petition the three county authorities to institute such a farm. Soon afterwards a conference of counties affiliated was convened at Aberystwyth College, and it was there agreed to establish such a farm suitable to the peculiar needs and conditions obtaining in the counties. The several counties, with the exception of Pembrokeshire, have joined. It is essential that the experimental farm and laboratory should be in close proximity. The local plot is more required now with the establishment of the experimental farm than before in order to test conclusions arrived at, at the central station, and the effect of the prevailing local conditions on them. One is necessary to the other.

8272. Are you yourself one of the managers of the farm?—I am a member of the College Council, and a member of the Agricultural Committee, and a representative of the County Council on the Farm Committee.

8273. Do you go to the farm frequently yourself?—Yes, I have been there three or four times since its establishment.

8274. How far is it situated from the College?—That is the disadvantage, if anything; communication between different places is not easy of access. Carmarthen would be 50 miles from Aberystwyth.

8275. Do you mean the farm is 50 miles from the College?—No, I was speaking of the County of Carmarthen. I should say the farm is two to two-and-a-half miles from the College.

8276. Do farmers visit the farm?—Yes, parties of farmers visit the farm, especially at show time, but on other occasions as well.

8277. Do you ever hear the farm being talked about when you are at home?—Yes, a good deal; they take a great deal of interest in it.

8278. You consider it of great value?—Yes. No doubt they take more interest in the farm and in the College because there is hardly a farmer in Carmarthenshire whose son or daughter has not been through the short course.

8279. It is your opinion that, in addition to that experimental farm, local experimental plots are very desirable?—Yes, to carry out experiments in these local places.

8280. On the subject of co-operation I think we will hardly trouble you to read the whole of this statement, because Principal Roberts has already told us something about it. Perhaps you will tell us what the present position is with regard to co-operation?—When the County Councils of Carmarthen, Cardigan and Pembroke, and also the College Council appointed in 1902 delegates to enquire and report on the agricultural co-operative movement in Ireland I was appointed the honorary secretary of the deputation for the three counties. I have a copy of their report here. I was afterwards chairman of the society that we started soon after our visit to Ireland and seeing the work of the movement there. We started with about 80 members, and in the course of about a month or two we saw that we could carry it on successfully. At that time there was a large number of farmers who were sitting on the fence really waiting to see how it turned out and they have mostly come in, and to-day we have 400 members all taking an active interest in it, and all drawn from a radius of six or seven miles from the centre of Carmarthen. The turnover for the first year amounted to £5,000, it was a little over £11,000 the year after, last year we reached a total of over £18,000, and still we are increasing again this year. We have made all our arrangements to open another centre in the course of a month or two some nine miles away in a district which is quite as good as the Carmarthen district.

8281. These societies are not financed or assisted in any way by the Councils, are they?—Not in any way at all.

8282. Are they assisted in any way by the College at Aberystwyth?—I think lectures on co-operation have been delivered at the college since that visit to Ireland—as the result of it. I may say the students who have been through the short course at Aberystwyth are our recruiting ground.

8283. (*By Lord Moreton.*) Does the College help you at all as regards the analyses of cakes, feeding stuffs and manures?—Yes. Under the old Act the arrangement between the College and the Council used to be that the sender of the sample was to pay half the fee to the College for the analysis and the County Council the other half. Very few samples were taken under that arrangement, so the County Council resolved to give the analyses free and make an annual grant towards the College laboratory. The result was that an average of 40 samples were sent up every year throughout the county. Under the new Act we have made further arrangements with the College.

8284. (*By Lord Barnard.*) With regard to the subject of county lectures, you say you are of opinion that the time has arrived when there should be an agricultural lecturer and expert for every county. Those are two separate duties, are they not?—The lecturer would have to be an expert to a great extent.

8285. You would not agree with some of the witnesses who have been here and who consider, except for the purpose of stimulating an interest in the first instance, that lectures are not really of very great permanent good. I suppose you mean peripatetic lectures?—Yes, and lectures that would enlist sympathy with agriculture in the county and excite interest in it as much as possible, and the lecturer could make arrangements with regard to experimental plots and demonstrations, and could give lectures on them in the winter evenings afterwards. Ours is a larger county than any of the others that are affiliated, and that is why I make the suggestion so far as our county is concerned.

8286. Do you suggest that this lecturer should be an official of the County Council exclusively, or that he should be connected with the College?—Connected with the central institution, the College, by all means.

Mr. H
Jones Davies.
13 June, 1907.

Mr. H.
Jones-Davies
13 June, 1907

8287. What is your view with regard to intermediate schools and agricultural instruction?—There is very little done as regards agricultural instruction under our intermediate education system so far in the county of Carmarthenshire, and there are two or three intermediate schools situated in typically agricultural districts. Very little is done as regards agricultural teaching in them, and what I suggest is that one of these intermediate schools should specialise in agriculture, so that a farmer might know if his son was going on the land that there was an intermediate school where he would get that special training, and such a school would thereby become a feeder for the Agricultural College at Aberystwyth for those who wanted to pursue the higher branches.

8288. Am I right in thinking that there is a Central Board of Education for Wales?—Yes; I am a member of that Board.

8289. So that you might press your views on that Board?—Yes, that is so, and they have it under consideration to a certain extent, but a great deal of the arrangements are in the hands of the local managers of the schools who are not under the control of the central authority.

8290. You think evening continuation schools require development, and that something in the direction of providing agricultural teaching in those schools might be done?—Yes, there is very little work of that kind done in the rural districts; in the mining districts they take on much better.

8291. The population is greater probably in the mining districts?—Yes.

8292. Is not one difficulty of the evening class in a sparse district the long distance for young people to come be an evening?—Yes, in the rural districts; they can be more easily organised in the populous districts.

8293. In spite of that you think it would be an advantage?—Undoubtedly, because those that are now held in the rural districts really do not take up an agricultural line in their mode of instruction.

8294. You have some notes on the subject of rates?—Yes, that question has affected agricultural education very much in our county lately.

8295. You may as well tell us perhaps in what way it has affected agriculture?—In this respect. The high water mark of agricultural instruction was the year 1902-3, when the new Education Act came into force. At that time we levied a penny rate, which was not levied anywhere else in Wales for technical instruction. We spent over £1,000 for agricultural education. I have the syllabuses for that year and the technical grants made last year, if you care to see them.

8296. The evidence you have written down here is practically the same as we have got from all over England, that is to say that since the Act of 1902 the County Councils have had far less funds at their disposal for such a subject as agricultural instruction?—That is so. We have still the ordinary rate, but more than that goes towards the training of elementary teachers. I have the financial statement of the pupil teacher instruction in the county for last year. (*Handing document.*)

8297. I see in this poster which you handed in that you offer 18 short course scholarships of £10 each open to farmers' sons and tenable at the University College. Are all those 18 taken up?—They are reduced to 12 now, because of these financial considerations..

8298. They were reduced in 1906 to 12?—Yes, and so they are this year. We have allocated the technical grants a month ago; we do it at the commencement of the financial year.

8299. (*By Lord Moreton.*) Can you give us any idea as to the character of the stock and the method of cultivation generally on the College farm?—They have Short-horns there and black Welsh cattle—two varieties of Welsh black cattle, Castle-Martin and North Wales, cattle that are typical of the stock kept in the affiliated counties.

8300. They do not confine themselves to any one particular breed, or any one particular locality?—No, they do not; they try and assimilate the farm as far as possible according to the conditions of the affiliated counties.

8301. The same applies to sheep, I suppose?—Yes.

8302. You have different varieties?—Yes, Shropshire and Welsh mountain.

8303. The stock is varied?—Yes.

8304. (*By Mr. Latham.*) Kindly explain what you mean by saying that the idea, on the part of those who

attended the lectures and dairy school, was more out of curiosity than to see what could be learnt by agricultural education?—They had no understanding of agricultural education in the county before, so they simply came at first, a number of them, out of curiosity to see what was going on.

8305. Was it necessary to go to the dairy schools for that purpose? Was there no other chance of meeting any educational authority except dairy schools?—Not at that time in the way of agricultural education in the county.

8306. Did the instructress at the dairy school lecture on anything else except dairy work?—The instructresses were supplied by the College at Aberystwyth. There were instructresses appointed at Aberystwyth College, and the County Council of each different county then applied for a course of lectures to the College and the College sent the instructresses to each county.

8307. Were the attendants at the lectures male or females?—Nearly all females—I do not think I have heard of a male.

8308. The interest in these dairy schools became so great that they were eventually attended by a very large number of pupils?—That is so.

8309. I do not understand your definition of this. You say: "The lectures and dairy schools were well attended, not perhaps for the sake of the instruction given, but, in the main, for the curiosity of hearing how farming was to be made more remunerative by the college professor."—That was at the commencement, but afterwards they took a different view of it. After they had seen the instruction and how it was being worked they took a different view of the affair altogether.

8310. Did they go in the first place to criticise?—Yes, to a very large extent.

8311. They were not very favourably inclined?—No, of course they were prejudiced in going there.

8312. I take it they did not go so much to get agricultural education as to smile and ridicule?—That was so perhaps, for the first year or so.

8313. But now they attend in very large numbers?—Yes, things took a different complexion.

8314. They have attended in very large numbers and are perfectly satisfied with the results of the education given?—Yes.

8315. You spoke of having a membership of your co-operative association of 400 farmers who were drawn from a very little circle?—From a radius of six miles or so.

8316. What must have been their occupation—400 farmers drawn from within six miles?—It embraces every class of farmer. The majority of them would be holders of 50 acres or so, and we should have some agricultural labourers, members, but nearly every agricultural labourer in Wales, except those who are at the farmers' board and expense, have a little land which they work casually themselves.

8317. That is how you get the 400 men in the very small space of six miles?—Yes.

8318. Were the lectures that were given in the county through the College all on agriculture?—All on agricultural subjects.

8319. Were they new subjects?—Quite new.

8320. That is to say, before you had these lectures introduced amongst you you knew very little of agriculture except just the native agriculture?—There was practically nothing in the way of agricultural instruction then.

8321. It has been taken great advantage of?—Great advantage has been taken of it.

8322. Do you consider the Principality is making much greater profits by this superior education? Are you making more profits on your farm because you have got a very superior education—is the land producing more since you have had this agricultural education?—No doubt the land is producing more, and another thing, if it was not for this instruction they would not be able to meet the requirements of the markets to the extent they do now. Take butter making, for example.

8323. Do you consider that the butter that is being made in the district at the present time is of a greater value than it was before?—It has improved in quality.

8324. What would be about the price that you are receiving for your butter now?—The price now would be about 10½d. to 11d. a lb.

8325. What was it before?—That depends on the fluctuations of the markets. Some eight or nine years ago I remember it went as low as 7½d. to 8d. in the summer time, but that was an exceptional year.

8326. You spoke just now about the Fertilisers and Feeding Stuffs Act. Does the college carry out analyses for nothing?—They do not. We give them an annual contribution under the old Act, but under the new Act the official sampler takes the samples now.

8327. That is not quite what I mean. The help comes from the County Council. The college were paid for their work?—They were.

8328. I presume the young men who are leaving the elementary schools do require some great stimulus before they can be got to go on to the College. You want something between the elementary schools and the life they are supposed to lead at the college and the education they are likely to get there?—Yes, but the majority of our young farmers go to the intermediate schools from the elementary. We shall find in the course of the next three or four years, I daresay, that the great majority of these young farmers will have been through the intermediate schools.

8329. Are those the schools that the 1902 Act is supposed to be taking up at the present time?—No, those intermediate schools came into existence in 1889. That is by the special Welsh Intermediate Education Act. Wales had a special Act of its own. They are not allowed to be at those schools over 18 years of age; they generally go from the elementary to the intermediate.

8330. At what age do they leave the intermediate?—They generally leave at the age of 15 or 16.

8331. At what age do they take them at the College?—16 is the limit. We do not allow them under 16.

8332. I want to know what they do between the time they leave the intermediate school and the college?—Farming as a rule.

8333. Is it a very great advantage that they should not go to the college until they have had some idea of the life on the land?—Yes, they ought to have some idea of the life on the land, but you will find the farmers' sons who attend the elementary schools often, during the time they attend the elementary schools, do a great deal of farm work on their fathers' farms before they go to school in the mornings and after they leave school in the evenings.

8334. Are the majority of these lads in the elementary schools working with their parents and helping them to carry on their occupation?—Yes, a very large number of them.

8335. (*By Professor Middleton.*) Which department of the work of the College has done most for you in Carmarthenshire? Would you consider you have got more from the local lectures or from the short courses or from the experimental farm? Which do you think is the most valuable work?—The short courses, I think. We have taken the future into consideration as well.

8336. Your county has had from 12 to 18 students in a year at that short course. Since when?—In 1893 we commenced the young women and in 1898 we commenced the young men.

8337. So that you have now in the county of Carmarthenshire a very large number of young men who have been to the short course?—Yes, you can hardly go to any part of the county without coming in contact with them.

8338. Have you noticed in the county of Carmarthenshire whether these young men who have been to the short course are shaping better and are likely to make better farmers than those who have stayed at home?—Yes, they have more advanced views than those at home.

8339. You think the seven or eight weeks they have had at Aberystwyth has had a distinct effect upon them and that it will influence their farming?—Yes, it is a great stimulus in influencing their farming.

8340. (*By Mr. Medd.*) What is the length of the short course?—Six or seven weeks.

8341. What time of year?—It used to be in October.

8342. From October till December?—Yes.

8343. Have you ever thought of extending it during the winter months?—Of course we have the continuation short course.

8344. What is the continuation short course?—For the two best pupils in the short course; they are then allowed to proceed for the advanced course.

8345. How many would there be in that?—There will

be 12 sent up this year and scholarships are offered for the continuation course of 16 weeks for the two best students.

8346. What is their average age?—They range from 16 up to 23.

8347. Do they as a rule come to you direct from the intermediate school or do they come from off the land?—Most of them now have been at intermediate schools before we have selected them for these scholarships.

8348. What proportion come off the land?—They have all been in contact with the land; they must be farmers' sons.

8349. How many have been actually farming?—Doing work on the land?

8350. Yes?—They have all done work on the land.

8351. When do they leave the intermediate school?—When they leave the intermediate school they go on to the land then.

8352. You mean they are combining school life and farm life?—When they are taking the short course of course they cannot return home at nights, but while they are at the intermediate school they can, and they go on the farm, and, as soon as they leave the short course at the College, they work on the land again.

8353. Can you tell us what effect the college farm has had upon the neighbourhood?—I cannot speak of the immediate neighbourhood because I am so far away from the farm.

8354. When I was there Mr. Williams gave me several striking instances, especially with regard to the great improvement that had taken place in sheep?—Yes.

8355. That has not come within your knowledge?—No, I have not noticed that so far.

8356. You were mentioning to Lord Barnard about the intermediate schools?—Yes.

8357. What is it exactly that you propose to do?—What I propose to do is to take, for instance, our county, Carmarthenshire, where we have three, I think, intermediate schools situated in purely agricultural centres, I propose that one of those schools should specialise in agriculture, so that a farmer whose son was going in for farming could send his son there, where he would receive a special education in agriculture.

8358. You do not propose to combine agricultural teaching there with general education?—No, I do not think it would be quite so successful.

8359. It would not, undoubtedly.—No.

8360. If you were to have an intermediate agricultural school it must be a specific agricultural school.—Yes.

8361. And not attempt to cater for two distinct classes?—No, quite by itself. I think there would be plenty of pupils forthcoming for that school in the county alone.

8362. At what age would you propose to take them—from thirteen?—As soon as they leave the elementary for the intermediate.

8363. From 13 to 14 up to the age of 17 or 18, I suppose?—Yes, say 17 or 18.

8364. Would you advise your course to be complete in itself, and, although of an intermediate grade, not necessarily leading to Aberystwyth?—It would be a benefit of course for those going in for the higher branches that they should proceed to Aberystwyth.

8365. Quite so, but of course there are a certain number of lads in every county who could not prolong their education beyond the age of 17 or 18?—Not unless they were assisted by the County Education authority.

8366. Yes, and even if they were assisted it might be desirable that they should begin earning their living at the age of 17 or 18?—Yes.

8367. In other words your aim would be to pass on your best pupils, by the aid of scholarships or otherwise, to Aberystwyth?—Yes.

8368. But that for the ruck, for the ordinary pupil, you would assume that the boy's education would finish at the age of 17 or 18?—The ordinary one would, yes.

8369. You would endeavour, in organising a school of this kind, to make it as practical as possible?—Yes. I would suggest that there should be some land attached to it, and that we should have the practical side as well as the theoretical side.

8370. In developing it you would develop it rather upon

Mr. H.
Jones-Davies.
13 June, 1907

Mr. H.
Jones-Davies.
13 June, 1907

the practical than upon the scientific side?—Yes, because if they wanted to proceed for the scientific side they could get that at Aberystwyth where the laboratories are.

8371. For that grade of student the practical side is more important than the scientific side?—Yes, at the intermediate.

8372. I sincerely hope you will succeed in establishing a school of that type. We want them very badly in England, and you have given us the lead in so many ways in Wales that I hope you will succeed in that respect too. —I made that suggestion the other day at a meeting of the Carmarthenshire Chamber of Agriculture, and it was well received.

8373. I trust you will succeed in it.—I hope so.

8374. (*By Mr. Davies.*) I think, in answer to Mr. Latham, you told us you considered it essential that those young men before they go up to college should have some practical knowledge of the work of a farm?—They have that knowledge owing to the conditions now prevailing at home.

8375. Do you consider that should be a condition before they enter the College? There are a certain number of young men who as you know come up for these courses, and more especially for the diploma course, who have had no knowledge of farm work before they enter the College? —We select those young men who are likely to benefit by this mode of instruction. The members of the Education Committee as a rule know every applicant that applies for these scholarships.

8376. I am not speaking so much about the scholarships now, but more from the point of view of the College. Do you think the College should lay down a condition that every student that entered the agricultural department should have had some previous practical experience of a farm as an essential principle?—That would be of great assistance, no doubt.

8377. With regard to your scholarships, as far as I can make out from the Board of Agriculture's Report, in the year 1905-6 there were only £60 allotted the scholarships from Carmarthenshire. I understood you to say in answer to Lord Barnard that there were at least 12 scholarships granted?—Yes, there were 12 for young men of the value of £10 each, and 12 for young women of £12 each. I do not understand the £60, unless it is for horticulture.

8378. No, horticulture is £176?—That includes the scholarship for elementary teachers as well.

8379. Perhaps you will tell the Committee how these scholarships are awarded. Is there any examination?—No, there is no examination.

8380. How does the County Council proceed to allot the scholarships?—Say, for instance, we have 30 applicants for 12 scholarships we generally allot so many for each union according to the agricultural value of that union, and then we proceed to elect the candidates, and it is always understood that a candidate who has been unsuccessful the year before should have priority the year after.

8381. So that it is really not a question of money. The young man may not have passed any examination at all, and may not have come from an intermediate school, but so long as he sends in his application he is almost certain of getting a scholarship?—There is no test in that way.

8382. Do not you think it would be desirable to have a test?—I do not think so. I will give you an instance of a young woman who had only been to an elementary school. She had had no training beyond the fifth standard. She won one of the two scholarships offered to the two best students in the advanced short-course at Aberystwyth. She was very backward in the theoretical part, but she was helped so far on in the practical that she obtained almost the maximum marks, and was the second best in our county. She pursued that course, and she has been so successful since that she has been appointed lecturer there, and she also won two first prizes in the butter-making competitions at the London Dairy Show.

8383. You prefer the system of allotting scholarships without any test whatever?—Yes, because we could not test them in all cases; some have advantages, others have not.

8384. Does not it very often happen that farmers who can afford to send their sons to these colleges are granted scholarships, and the smaller farmers who perhaps cannot afford so well to send their sons turn round and say: "These men who can afford to send their sons are given scholarships and we are not given any, and therefore we will not have anything to do with the College," and their interest in agricultural education evaporates?—We do find the

feeling which you have just touched upon obtaining in the county. We have tried really not to grant the scholarships to the children of large and well-to-do farmers—of course there are very few in the county—and that they should pay for their own instruction, but we very often find that they will not do so, and they grumble and say: "We have to pay the rates, so why should not we have this particular mode of aid?"

8385. Would not you get over that by a system of examination?—You see the intellectual attainments of and advantages of the son of the large well-to-do farmer and the son of the small farmer may not be the same. The son of the large farmer would probably have been to the intermediate school whereas the son of the small farmer may only have been to the elementary school, and there would be a difference between their educational attainments.

8386. You suggest some better system in the way of continuation schools in the county?—I do.

8387. They would be attended by a lecturer from the College, I suppose?—Yes. I should like it to be kept in touch with the central institution.

8388. If you had those schools in different centres, all the boys and girls would have the same chance, would they not?—Yes, and I should suggest that they should be selected from candidates attending these continuation schools.

8389. You do not think it would be a good thing if all the county authorities pooled their scholarships and held examinations and allotted the scholarships where they thought best?—No, I do not think the counties would take the same interest in it; they like to have a voice in the handling of their own money.

8390. Do you get more applications for scholarships than you have scholarships to give?—Yes, that is always the case. We generally get treble the number.

8391. I think the Committee were interested in your remarks with regard to the co-operative society which you started, had that anything to do with the co-operative movement at St. Clears, where they had the co-operative dairy?—No, it is worked on quite different lines. Our co-operative movement is similar to the co-operative movement in Ireland, and another thing, as far as the St. Clears butter factory was concerned it was not worked on the same principle of co-operation as we work on.

8392. What have the old students done who have left the College. Have they helped to introduce a new spirit with regard to the College throughout the county?—Yes, they still take a great interest in the work of the College.

8393. You find the old students' association is a great help in that direction?—Yes, a very great help.

8394. I think you also said that there ought to be an agricultural lecturer and expert in the county. Do you mean a man who would be on the spot to enquire into economic problems which are closely connected with agriculture, and to institute a sort of bureau of information. Were you referring to a man who would do work of that sort?—Yes, a man who could carry out these experiments and demonstrate upon them and report on the work of agriculture generally in the county, and that he should be appointed by the Aberystwyth authorities.

8395. And that he should reside permanently in the county?—Yes, and I should say that he should spend the majority of his time in the county and organise agricultural education in the county.

8396. Also enquire into all sorts of problems closely connected with agriculture?—Yes, and a man that any farmer could approach.

8397. Have you tried any market day lectures in the county?—I think they were tried in the county just at the commencement of agricultural education there, but they were not successful.

8398. What is the attitude of the farmers especially towards the farm at Aberystwyth?—They have demonstrated a favourable attitude towards it.

8399. The attitude they take up is very different from what it was when the department was first started at the College?—Yes. When I addressed the Chamber of Agriculture some years ago on acquiring an experimental farm the Committee were unanimously in favour of establishing one.

8400. Have you an Agricultural Committee of the Agricultural Department established?—No, we have not.

8401. (*By Lord Barnard.*) You have no opinion to

give on the subject of instruction in forestry?—No, we have done nothing in that branch so far.

8402. I see you have a large amount of woodland in your county?—I think it comes about the second largest in Wales.

8403. 24,000 acres. Do not you think it would be

desirable if something could be done, not from the farmers point of view, because the farmer would not have many woods?—No, but from the farmers' point of view it would have a bearing upon the climate.

8404. But from a national point of view of timber growing I mean?—Yes.

Mr. H.
Jones-Davies.
13 June, 1907

Mr. B. T. P. BARKER, M.A., called and examined.

8405. (By Lord Barnard.) You are Director of the National Fruit and Cider Institute?—Yes.

8406. Which is established at a place called Long Ashton, near Bristol?—Yes.

8407. Would you mind telling us very briefly what are your qualifications? Are you a chemist?—I am, strictly speaking, a botanist rather than a chemist. As a matter of fact both chemistry and botany were my two subjects for the final examination at Cambridge.

8408. I see you are a Master of Arts; of what university may I ask?—Cambridge, having passed both parts of the Natural Sciences Tripos.

8409. Would you give the Committee a very brief statement of the history and formation of this Institute, and inform the Committee exactly what it is and what its functions are?—In 1893, the Bath and West Society started some experiments on cider making. These experiments were continued at Butleigh until 1902 under Mr. Neville Grenville's direction, Mr. Lloyd undertaking the experimental work. At that stage it was thought desirable to extend the scope of the work, and it was found necessary that more time perhaps should be devoted to it, and that the area of the work should be extended. As a result the Board of Agriculture took the lead in organising the foundation of a central institute at which experiments on cider making should be conducted, and also educational work as far as modern developments of cider making were concerned. In conjunction with the Board of Agriculture the County Councils of Devon, Somerset, Gloucester, Hereford, Worcester and Monmouthshire worked. Each of these bodies contributes towards the support of the Institute, and also the Bath and West of England Society. The form in which the Institute was established was that of a non-profit company. The site of the Institute is at Long Ashton, about four miles from Bristol, which forms a fairly central position for the whole of the counties interested. The land there which was taken over covers about 15 acres, and the buildings have been adapted from the state of ordinary farm buildings into buildings suited to the special purposes of the work. The constitution of the management of the Institute is a board of governors who are nominated by the contributing bodies and by bodies interested in the work, such as the Agricultural Department of Cambridge University, the Royal Horticultural Society and the University College, Bristol. In addition to this board of governors there is a managing committee of seven members who really are responsible for the general course and policy of the Institute.

8410. They are a committee of the board of governors, I suppose?—Yes. As regards the upkeep of the place, we receive grants of £300 a year from the Board of Agriculture, £100 a year from each of the following counties: Devon, Somerset, Gloucester, Hereford and Worcester, and £50 from Monmouthshire. In addition to these the Bath and West of England Agricultural Society contributes an annual grant of £100.

8411. Making a total of £950?—Yes. In addition to these grants, there are associated with the Institute individuals interested in the subjects which are touched upon in our work, and these either become members or associates. The members subscribe one guinea per annum and the associates 5s. per annum. The associateship was formed really to interest farmers themselves in the work. It was felt that there might be many who would be willing to subscribe 5s. a year, say, who would not care to become full members. Both members and associates have certain privileges, such as obtaining advice gratis from the staff, and also of having analysed each season a certain number of ciders or varieties of cider fruit, while they can also inspect the work being carried on at any time. The sales of produce also add a little to our income, and this is an increasing source.

8412. You have not told us what the number of members and associates is?—At the present time we have about 100, between 60 and 70 members and between 20 and 30 associates. The capital expenditure on the place had to be provided for out of the ordinary income. The Ashton Court Estate, on whose estate we are situated, are repaid a certain sum, £81 odd, each year for seven years, in respect of alterations of buildings, etc.

8413. You have not yet told us what the nature of the tenure of your property is. Have you a lease of it, or have you bought it?—We have a lease for seven years, renewable at the end of that time.

8414. What is the nature of the land—is it orchard?—We have 10 acres of orchard land, five consisting of an old orchard which was there when we took the land over, and five which we planted ourselves on taking the land, and the rest, which was pasture, is converted now into fruit plantations and a nursery.

8415. This was a sort of small farm, was it?—Part of a large farm.

8416. Forming part of a large estate belonging to a land-owner in Somerset?—Yes.

8417. Did you get it on favourable terms?—I really can hardly tell you the terms. That was all arranged before I came into connection with it.

8418. What rent do you pay?—The annual rent is £76 12s.

8419. (By Lord Moreton.) I take it that includes the paying off of the sum you mentioned just now?—No; £76 12s. per annum in addition to paying off the capital sum expended on buildings.

8420. (By Lord Barnard.) I suppose you have got considerable buildings?—We have a certain amount of buildings, they are not very extensive, but they are large enough for our cider work and laboratory.

8421. What do the buildings consist of?—There is a cottage, a laboratory, a cider-house, including a cellar, an apple loft, and accommodation for storage and plant.

8422. The adaptation of the premises was done by the landlord?—Yes.

8423. In respect of that you are paying £81 a year?—£81 a year for seven years.

8424. In addition to the rent of £76?—Yes.

8425. I do not think you can be quite right in your figure, but Mr. Brooke-Hunt is associated with the institute and he will give us the exact figures. Perhaps this is not a matter that is within your knowledge?—No, strictly speaking, it is not.

8426. You are the director of the scientific work which is carried on there?—Yes.

8427. Perhaps you will tell us what that work is?—The objects for which the Institute was started were experimental work and educational work relating to cider and fruit culture. In addition to those objects, the Articles of Association state that work in connection with vegetable culture may also be undertaken, and also any matters where the welfare of the industries concerned is involved. As regards the present facilities for work, our staff consists of Mr. Lloyd, who is honorary director and consulting chemist, Mr. Ettle, who acts as superintendent of the fruit department, and myself. I might state that Mr. Lloyd has a professional practice as an analyst in London, and that Mr. Ettle is Horticultural Director for Somerset, so that I am the only person on the staff who is able to give his full time to the actual work of the Institute. We employ a working foreman, who is qualified to do the necessary work of pruning and grafting, and so on, in the orchards and nursery, two labourers, and a boy. The equipment of the place consists of a laboratory, cider-house

Mr. B. T. P.
Barker.

8427b

8427c

Mr. B. T. P.
Barker.

13 June, 1907

8427d

and fruit-grounds, the fruit-grounds including five acres of a newly-planted orchard, five acres of an old orchard, one acre nursery, and two acres of fruit plantation laid out on market lines. Our work at present is very much restricted owing to the lack of staff, both as regards research and education. The research work in the laboratory is limited practically to that portion of my own time which can be spared from general work, which is composed of practical experiments in connection with fruit and cider, consultative work, management, visits to farmers and cider makers, Show work, and visitors to the place. The practical experiments are also to some extent limited by the same causes. The educational work is limited in addition to lack of staff by lack of accommodation. We are also very short-handed as regards labour. In particular, in the fruit section of the work when we are dealing with insect pests on the trees during the summer we find we have not sufficient labour to conduct spraying operations and other methods to keep down pests as adequately as should be done on a place which is generally looked upon as being, perhaps, representative of a model fruit station. The research work may be divided into two groups—the work in connection with cider, and the work in connection with the fruit section. Shall I give you the particulars of the main lines of research work?

8427e

8428. I think you might just tell us the headings?—In the cider department one of the main lines is the question of the investigation of the varieties of cider fruit which are at present existing. It has become quite clear during the course of the work that the kind of apple used has a very great influence on the quality and nature of the cider, and that different kinds have widely different properties. As regards the number of these kinds which exist they are almost unlimited.

8429. I do not think we want to go too deeply into it now that you have told us the headings unless you think it important that the Committee should know it?—It was only a matter of bringing out the number of these varieties. In each orchard in the West of England into which you go you find a different set of apples, and in many districts the apples go under different names, so that the whole question is very complicated.

8430a

8430. You hope in course of time, I suppose, to eventually increase the general stock of knowledge on that and as to the different kinds of apples available, and which are the most suitable having regard to the varying conditions of climate and soil?—That is it exactly: to select the proper sorts for propagation. Regular analyses are also made of these different apples each season. Another line of the work consists of investigations on the organisms of fermentation and other problems connected directly with fermentation. We also conduct experiments of different practical methods, variations in the methods as found in use in different parts of the country. The question of blending has also been dealt with and also the disorders to which cider is liable. We devote a considerable amount of attention to this point, as each year in certain districts of the cider making counties a great loss of the cider in value is due to one particular disorder—cider sickness. Many important lines of work have to be practically left untouched owing to our lack of staff, such for instance as the raising of new varieties of cider fruit. In France they have managed to improve the quality of their cider enormously by paying special attention to the raising of new varieties and to the improvement of the older kinds. The questions of soils, season, and the age of the tree are also probably of very considerable importance, but the field opened in these questions is so wide that it is impossible for us in the present circumstances to deal with them. Special attention is also required regarding chemical changes in the ripening of the fruit and during the course of fermentation and the maturing of the cider. An extensive investigation into the properties of the different kinds of yeasts and other ferments of cider is also necessary. There are also many varieties of apples existing in the orchards whose properties are unknown, that is to say there are probably some very valuable kinds which have been completely overlooked. No doubt very useful results would be obtained if a special investigation could be made into the characters of some of the lesser known varieties of fruit. Most of these points are intimately connected with the quality of the cider and are more or less bound up together, so that for the work to go on under really favourable conditions these points should be taken in hand concurrently, rather than dealt with individually and in an isolated manner from season to season, since the conditions are always

8430b

variable. One never has juice of the same character to deal with twice, and so many different factors enter into the question that investigations into a particular point are made very much more difficult by not knowing in the least degree the influence of some of the points which we have raised. In the fruit section of the work we have a young orchard in which experiments relating to the grassing over of the ground under the trees has been dealt with, the influence of an intermediate stock, head grafting and base grafting, and also variety tests. This young orchard is composed entirely of cider and perry varieties of fruit: there is also a nursery of one acre in extent in which we are propagating the best varieties of cider and perry fruit, paying particular attention to old sorts of high reputation which were in danger of dying out. There are two fruit plantations which have been laid out more or less from a market point of view, and in these we are conducting variety tests, pruning experiments, and experiments on rough and deep planting.

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8431. When you speak of fruit plantations are you referring solely to cider fruit plantations?—No, these are market plantations: they consist of apple and pear trees between which are planted bush apples and pears, and between these again raspberries, currants and gooseberries, with rows of strawberries alternating. They will eventually be orchards. A comparatively small increase in our income would mean a relatively large increase in the amount of work which could be done, since we have already the establishment provided and practically an increase of staff only is necessary. The educational side of our work is only possible at the expense of research. As regards our present efforts we issue reports and other publications such as leaflets dealing with matters of particular interest to cider makers and fruit growers, and also giving accounts of the results of the experimental work which is being carried on. We send educational exhibits of cider and exhibits illustrating the fruit side of the work to the annual shows of the county agricultural societies, including only those counties which contribute towards the support of the Institute. In that way we come into touch with a good many farmers and others whom we should hardly meet with otherwise. Visits are also made to farmers and cider makers to give them advice on special problems, and also to advise them with regard to their plant and machinery, etc., for cider making. Each year a tasting day is organised, when all interested in cider making in the contributing counties are invited, and the ciders made in the course of the experimental work of the preceding season are all sampled, so that they may see for themselves how the experiments resulted. Parties are also organised at intervals in the contributing counties to visit the place while cider making is in progress, and to inspect the fruit grounds at different seasons of the year. On matters relating to cider and fruit growing conferences are also being organised, and we are hoping to be able to give a certain amount of instruction to the horticultural instructors in the contributing counties on special technical points dealing with cider making, particularly with the fermentation side of cider making, so that in their work in their respective localities they may be able to deal with the matter more fully than they would otherwise. We are also open to take pupils either as working pupils to take part in the general work of the place, both cider making and fruit growing, and also for special instruction in the scientific side of the work in the laboratory, but our facilities particularly for the laboratory work are very limited at present: the laboratory is only a small one. The other work is mainly consultative. Our members and associates consult us on matters relating to disorders of cider, analyses of ciders and cider fruit, and in the fruit growing section, to insect and fungoid pests in particular. As regards the steps which we have taken in connection with the welfare of the industries concerned, we have taken a leading part in organising a deputation to the Board of Agriculture in connection with cider adulteration and have made special analyses of ciders on the market to determine how far adulteration does exist at present. We have also taken steps in connection with the railway rates for cider fruit, which are at present high. We find that there is a certain amount of difficulty in coming into touch with the contributing counties as closely as we should like. It is impossible practically for one man to cover the six counties in a satisfactory manner.

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8432. Have not you representatives of each of the contributing counties on your Board of Governors?—Yes, but I was rather referring to visits and so on to farmers themselves—coming into touch with the farmers directly and bringing them directly into touch with our work. In connection with the question of grants from

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the County Councils, I believe that they can only be made to institutions where educational work is being carried on at present, so that the research side of our work is bound to be affected owing to our relations with the counties over the question of grant. It is hoped that we may be able to co-operate more closely than hitherto with the agricultural departments in the contributing counties and work especially in conjunction with the horticultural instructors. In our nursery we have a large number of young cider fruit trees almost ready for distribution. It is hoped with these to start local centres and experimental orchards in different parts of the contributing counties, where experiments carried on at the Institute can be duplicated, and possibly also a certain amount of cider work may be conducted at the same time.

8433. I hardly think you need trouble the Committee with explaining the efforts which you propose to make with regard to the future organisation of the counties. On the subject of education, do you have any classes?—We have no regular classes.

8434. Have you any pupils at the Institute now?—We have not at present; we have had a few only. But, as I explained, our staff is so limited that proper time cannot be given to the educational work without interfering directly with the experimental work.

8435. On the subject of cider growers and fruit growers appealing to you for information, do you have many appeals for assistance and advice?—Yes, repeatedly.

8436. Is that increasing?—Yes.

8437. You find that there is increasing confidence among cider growers?—Undoubtedly.

8438. Have you any other topics on which you wish to give the Committee information?—The only other matter to which I was going to refer was in connection with the proposed Department of Economic Biology at the University College at Bristol, but I do not know that that need be brought up.

8439. We have had some evidence about that. You mentioned the exhibiting at shows. Is not that an expensive thing?—It is. We found it so expensive last year that we have had to limit our exhibits this year to shows where part of our expenses are borne by the society itself.

8440. I think, if my recollection is right, at some show or other there was a cider exhibit, the principal part of which was the offering of free drinks to the public. Do you do anything in that way?—Yes, but we restrict the sampling to those directly interested in cider making.

8441. Still, it is an expensive thing to have these stands at the shows?—It is expensive, but we have no definite stands. Arrangements are made for us inside a shed as a rule where there is a forestry or nature study exhibit; we are generally placed in that part.

8442. I suppose travelling expenses amount to a large sum?—Yes, a large total.

8443. Who controls the finance of this institution?—The Managing Committee control that.

8444. Has the Managing Committee a clerk or secretary?—They have an honorary secretary and an honorary treasurer.

8445. Somebody must keep the accounts, I suppose, as you spend the best part of £1,000 a year?—One of the clerks in the treasurer's office undertakes the account work for us.

8446. He is not a clerk belonging to the Institute?—No.

8447. I confess I have been a little surprised—no doubt it is owing to my want of knowledge of the district—at the necessity for the expenditure of so large a sum in connection with this particular industry. Is the industry of very great importance? Have you any figures as to the value of the cider that is made in a year or anything of that kind?—I have a few figures that I can give you.

8448. I will put it in another way. I apprehend one object you have in appearing here to-day is to impress upon this Committee the necessity for increased funds for the use of your Institute?—Yes.

8449. From what you have already told us you do not anticipate that any more funds can be obtained from the County Councils?—I see no prospect of getting them at once.

8450. Am I right in thinking you suggest that the Government is the only source from which you expect to get a grant?—That is so.

8451. I want you to make quite clear the grounds on which you suggest this Committee, if they think fit to do so, should recommend that a further grant towards your Institute is necessary. One of the grounds, no doubt, would be the enormous extent of the industry?—Yes.

8452. (By Lord Moreton.) Am I right in saying that the improvement which has been brought about by modern scientific methods of cider making has raised the quality of the cider that is made all over the country?—Yes. Putting the estimate at a low figure, the cider produced in Somerset alone may be estimated at £250,000 worth annually, and before the Departmental Committee on Fruit Culture an estimate was given as to the value of the cider produced in Hereford annually, and that was put at £600,000.

8453. That leaves Worcestershire, Devonshire, Gloucester and Monmouth and the other cider areas, without any figures?—Yes.

8454. (By Lord Barnard.) Of course your operation include other fruit growing as well?—Yes.

8455. There are a very large number of occupying tenants engaged in this industry in the counties?—Yes; almost every farmer is a cider maker in a small way.

8456. Is it among the products of his farm for marketing?—In many cases it is not for marketing, because it has been the custom to make it for the men largely, but many of the farmers now find it profitable to put it on the market, and they are paying more attention to its production for that reason. Undoubtedly a great many tenant farmers make a big income from it, and of course we deal not only with the cider work, but also with fruit growing.

8457. You have already given the Committee information on the point that your staff is insufficient and your time is too much taken up. Have you any other points you wish to urge upon the Committee as to the need for further funds, because, of course, you realise that the exchequer of this country is not unlimited, and is fed solely from the pockets of the taxpayers, if you want some further assistance from those taxpayers you must make out a very strong case for it. That is what I want you to do?—Our case practically is that by experimental work we hope to be able to put before the cider makers a better means of producing their cider, so that its value may be increased.

8458. It will be a matter of profit to the cider grower, and the fertility of the soil will be added to?—Yes, and in connection with the fruit growing, to show them the best varieties to grow, and the best means of culture.

8459. (By Lord Belper.) I gather you are supported by the several County Councils to some extent?—Yes.

8460. I did not catch the drift of your remarks when you said that the County Councils could not do any more for you because they would not contribute to research work—it was something in that sense?—The research work was to some extent hindered by the fact that we must largely depend on the County Council grants for our support, and that in order to earn these grants we must take up educational work as far as possible.

8461. And, therefore your research work is naturally limited because of the lack of staff and funds?—Yes.

8462. Is the only object of this institution the teaching of matters in connection with cider making?—And fruit growing.

8463. Fruit growing for cider making or all sorts of fruit growing?—All sorts. Market fruit in addition to cider fruit.

8464. To encourage farmers to have small orchards and grow fruit of all sorts where suitable?—Yes.

8465. You have got a fair grant considering the limited scope of your institution?—Yes, either for research, educational or practical work separately, but not for all three together.

8466. Have you compared what you are getting with what the agricultural and dairy colleges are getting which are doing work in all branches of agriculture. You can hardly say that you are not receiving your share either from the Board of Agriculture or from the counties. I do not mean to say you would not like to get more, but if you take the amount of money that is at present available either from the Board of Agriculture or out of the grants which the County Councils devote to the purpose, if you look at the sums that are being given to much larger institutions than yours, and who are teaching agriculture in a very complete and wide manner, your grant is not a very unreasonable one?—I know very little about the extent of the grant.

Mr. B. T. P. 8467. You get £300 from the Board of Agriculture ?—
Barker. Yes.

13 June, 1907 8468. The utmost they give to any college is £1,000 ?
—Yes.

8469. And many colleges get very much less, even although they are teaching every branch of agriculture, and dairying and practical agriculture as well ?—On the other hand, I believe we are the *only* institution dealing with the special points connected with cider and fruit growing.

8470. (*By Lord Moreton.*) Supposing you had more money, would you think it advisable to do anything as regards bringing the teaching of education in pruning and the care of cider trees more before the local public ?—Undoubtedly.

8471. Would you agree with me, though I am only speaking of one county, that there is a very great want of knowledge as to the proper care of the trees ?—That is so.

8472. And also—I do not know now so much about it as I did at one time—the very considerable care there ought to be in the treatment of the fruit between the time it left the tree and became cider ?—Yes.

8473. If you had more money you could bring more modern ideas to bear possibly on those who are actually making it on the smaller farms ?—Yes, we find it a difficult matter to deal with the farmers satisfactorily unless we go to them personally, and of course a large staff is necessary to cover six counties.

8474. You would agree with me that in spite of the scientific investigation which has taken place during the last few years, and all the great knowledge that has been accumulated with regard to the scientific side of cider making, even now there is considerable work to be done in demonstrating and bringing home, to possibly the smaller makers chiefly, the advantages to be gained by care and cleanliness, and adopting more modern systems than have been adopted in the past ?—That is so.

8475. (*By Mr. Latham.*) I presume you agree with me that the cider of to-day is quite a different article from what it was formerly ?—Yes.

8476. That has been brought about by what has been done by the Bath and West in the earlier days, and what has been done by you latterly ?—Yes, that is so.

8477. To go back to the expense of exhibits at agricultural shows, it is about the only chance you have of setting before the world the improvements that you have been able to bring about ?—It is one of the chances ; we have not very many, unless we can get the people to the Institute itself.

8478. If you do not have these stalls at the agricultural shows the cider makers would have very little chance of knowing about the advances that have been made in the cider industry at the present day ?—That is so.

8479. Now with regard to the money you receive in the way of grants, is not the cider making industry a very important one in your part of the country ?—Yes, and it is getting more important each season.

8480. And although a vast deal has been done there is great room for research at the present moment ?—Great room.

8481. If you could get more money and more assistance it would be a great advantage not only to the producer but also to the consumer ?—That is so.

(Lord REAY in the Chair.)

8482. (*By Professor Middleton.*) In connection with your work, I do not think you mentioned anything about control work. I do not know whether you include that among your functions ?—Yes, I include that as one of the functions, certainly.

8483. Do you agree there is a considerable amount of work in that direction to be done in the cider industry ?—Undoubtedly.

8484. I have been following your argument with reference to the case which you are able to make out for increased grants for cider. I do not know the cider districts myself, and I should like just to summarise what I take your argument to be. It is, as I understand it, that the cider making methods are very varied and some of them are very indifferent, or all ?—Yes.

8485. You think although the industry is a limited one, that there is a very great chance and possibility of improvement ?—Yes.

8486. You have told us that in two counties the cider

alone was worth something like £800,000 per annum ?—Yes.

8487. So that even on those two counties alone the amount you spend would be equal to something less than one-tenth of one per cent. of the total value of the cider ?—Yes.

8488. Therefore, seeing that there are such possibilities of improvement in fruit and cider work, one may very reasonably give increased grants for an institute of this sort, although the industry itself may not be, as compared with some of our other agricultural industries, a very big one ?—That is so. I might mention, perhaps, that cider making seems to be spreading now from the West of England counties into other parts.

8489. But even with the size of the industry at present the amount that is being spent by the institute is very small if we consider the possibility of improvement ?—Yes.

8490. The other point you made was that scientific assistance was necessary, and you yourself required assistance. You have had some years experience in conducting investigations in cider, and I would like to ask you what type of man you would require as an assistant. We have heard a great deal about the training of men for higher work, but from your experience of the sort of men you have had as assistants in cider work I should like you to tell us what sort of preliminary training should he have had ?—Providing he had a good training in chemistry and was fitted naturally for experimental work he would be a very suitable man.

8491. Would you say that a man who was going in for that sort of work should at least have passed Part I. of the Cambridge Natural Sciences Tripos ?—Yes.

• 8492. Is it necessary he should have taken Part II. ?—Not necessary, but it might be desirable. The better the man of course the better the work to be expected of him.

8493. You consider the man who had done well in Part I. would be suitably trained for a beginning ?—Yes, because cider work itself is so much apart from other work in a sense that a man has to become quite a specialist.

8494. Cider work is very specialised, perhaps a good deal more so than our agricultural work, but is it not very necessary that one who is going to specialise and to do special work should have a fairly broad preliminary training ?—Undoubtedly.

8495. I do not know whether it is true of cider, but it is true of most agricultural subjects, that the specialisation cannot be quite so complete as it can be in some of the other industries. You must have a broad preliminary training before one is really able to make much advance in agricultural work ?—Yes.

8496. Your selection, if you were selecting an assistant, would be of one who would be at least up to Part I., and possibly to Part II. ?—Yes. I think in the present state of affairs such a man could do more useful work than a man with less qualifications in chemistry and botany.

8497. Those are the two subjects which for cider making are most important ?—Yes. I am speaking now entirely of research work, and not from the educational point of view.

8498. I am referring to research work and the kind of work you wish an assistant for.—Yes.

8499. (*By Mr. Medd.*) Can you tell me the extent to which the cider makers consult your Institute. There is a very large cider industry in Devonshire, and also to some extent in Herefordshire, and in Somerset. To what extent do they consult you ?—In what way do you mean.

8500. Either as to the manufacture or as to the best type of apple, or the preservation of the apple, or any matter connected with the manufacture of cider ?—We are repeatedly consulted by them ; I could hardly give you any figures as to the extent.

8501. You quoted just now a very large figure as applying to the manufacture of cider, for instance in Somerset ?—Yes.

8502. Do an appreciable number of Somerset manufacturers consult you ?—Yes, particularly from the district where the best cider is made.

8503. Have you any record of the number of applications that you receive ?—I have not a record of the number of applications, but I have most of the applications by me.

8504. Does the same apply to Devon ?—Yes, but to a less extent in the case of the counties far removed from Bristol.

Mr. B. T. P.
Barker.
13 June, 1907

8505. In basing your claim for additional aid you must prove your immediate value not as an institute for research, but as an institute for aiding the cultivators, so to speak, in your immediate district?—It may give you some idea if I tell you that on our last sampling day we had between 70 and 80 farmers and others interested in cider making from the different counties at the Institute. Of course, that, I take it, may be considered a large number, considering the distance that so many of them have to come.

8506. I think you embrace six counties?—Yes.

8507. There must be, I suppose, considerably more than 70 or 80 cider makers in that area?—Yes.

8508. Do you inspect orchards and also advise as to the treatment—are you prepared to inspect orchards on application to you?—We make every effort to do so.

8509. Do you as a matter of fact have any applications, or does the manufacturer of cider rely on his own knowledge and experience?—We have applications at times, but a good deal of that work is done by the horticultural instructors.

8510. Then there are horticultural instructors covering exactly the same ground as you are?—So far as a certain part of their duties is concerned; they are supposed to advise as to the methods of treatment of orchards.

8511. Do you give any lectures or addresses on the manufacture of cider?—We have done nothing much in that way yet. I have given one or two short papers in connection with the subject of cider myself at one or two of the societies, but only one or two.

8512. How far do you think your educational work could be developed?—It could be developed very considerably under more favourable financial circumstances.

8513. That means that you require more money?—Very largely; it is a question of staff practically.

8514. Exactly, but if these horticultural lecturers are equally competent to advise on orchards and to some extent on the manufacture of cider, where do you come in?—In the present state of affairs hardly any of them, I believe, have had any practical acquaintance with the making of cider. They would have to come to us for advice in matters relating to cider.

8515. It could not be said that the necessity for an institute such as yours had died away now?—That could not be said at present, certainly.

8516. How far are you a trading concern?—We are a trading concern in so far as we dispose of the produce of the experimental work, but no further. We endeavour in selling off the cider that we have made to interfere as little as possible with the ordinary makers.

8517. What is the value of the produce that you sell?—£75 to £150 a year.

8518. You sell fruit trees to some extent?—Not fruit trees, only fruit.

8519. You have never attempted to lay out an orchard for other people?—Not for other people yet.

8520. Have you advised as to the best kind of trees that should be grown for cider making?—Repeatedly.

8521. What is your fee for that?—We do not charge any fee to residents in the contributing counties. Those who want advice on the subject are asked to become members of the Institute, and in many cases they either become members or associates.

8522. Have you any pupils attached to the Institute?—We have had a few, but not many.

8523. Have you any now?—No, not just at present.

8524. They are apprenticed to you when they come, are they not?—Not strictly apprenticed.

8525. What fee would they pay?—For work in the laboratory they pay a fee of 10 guineas for the three months' course, or four guineas per month; working pupils are paid by us at the rate of 7s. 6d. per week as a contribution towards their living expenses and in return for their labour.

8526. Do you not think you must make your institution an educational institution so far as possible?—We endeavour to do so as far as possible, but we have to remember that perhaps the first function for which the place was started was research. The whole work was started by way of experiment, and this is practically a development and extension of the previous course of experimental work.

8527. You referred just now to the possibility of

affiliation to Bristol?—Not of affiliation. At present, I take it, it is a question of working in as close association with them as possible. They have, of course, compared with us, an extensive staff and good laboratories which would be very useful from our point of view, while we, on the other hand, could assist them with the experiments in the fruit section on a practical scale.

8528. You would like to use their laboratories if possible?—We might do that if arrangements could be made.

8529. (By the Chairman.) Amongst your other work, you attempt to fight insect pests?—Yes, we have tried several methods; we are experimenting with several methods against the insect pests, but our work in that respect has been considerably limited by lack of funds.

8530. You would like to give further attention to that work?—Yes.

8531. For that purpose you wish to have a certain number of assistants?—Yes.

8532. You do not think in extending your educational operations you would thereby limit the research work?—Under present conditions we should.

8533. You think it of the utmost importance that research work should not be limited?—Yes, in the present state of affairs.

8534. You think what the cider industry wants most of all is research?—Yes. There is plenty of room for education, but, in my opinion, research is even more important, at present.

8535. You have no machinery on your premises yet, have you?—Yes, we have a complete cider making plant and machinery.

8536. I have here Mr. Brooke-Hunt's pamphlet, and there it is stated that the premises are not fitted up with machinery; they have been fitted up since that was issued?—Yes.

8537. Would you describe what that machinery is?—It consists of a mill and a press, with a steam engine for driving the machinery, and a boiler which is used for steaming out the casks and sterilising the apparatus used. That is practically the whole of the plant.

8538. That will not require extension?—No.

8539. You think that plant is adequate?—Yes, we should require very little extension in that way.

8540. You have a laboratory?—Yes, but it is very small.

8541. That would require extension?—Yes, with a larger staff, or if we have to take pupils.

8542. If the institution were thoroughly well equipped for research purposes, not for educational work, how many assistants could you employ usefully?—We could employ usefully at least two assistants, giving their whole time to the work, a chemist, and a biologist: but there is plenty of other work—and good work—for others as well.

8543. They would be men of high standing, as you have described in your answer to Professor Middleton?—Men who would have a good training, not a high scientific training, although, of course, that would be better; you want men as good as you can get.

8544. Supposing the Institute were to be extended on its educational side, how would you organise that. I mean what kind of courses would you give—over what length of time and for what kind of pupils?—Farmers' sons mainly, and courses for cider work for about four or five weeks, perhaps longer, during the cider making season, from November to Christmas, or from the beginning of October to the end of November; so they would see a good deal of the actual process of cider making.

8545. Then I suppose in winter you would give them evening classes?—Yes.

8546. You would be in favour of making it a winter school?—Practically.

8547. You think you could give them useful training in the six winter months?—I hardly think so long a period is necessary for the cider work, and the fruit work could be done, perhaps, better during the summer months.

8548. I am not talking of the theoretical part of the lectures in biology and chemistry and botany. That would require a longer course?—Yes.

8549. You like your pupils to be well prepared, of course?—Yes.

8550. It would be better if they came to you from

Mr. B. T. P. Barker. secondary schools rather than from elementary schools ?
—Yes.

13 June, 1907 8551. That would meet your object ?—Yes.

8552. Then you think after they had been with you it would be an advantage for them to go to the University College at Bristol ?—Yes.

8553. I suppose the University College at Bristol is contemplating the establishment of an agricultural department ?—Hardly what one would call an agricultural department. They propose at present to limit it to a department of economic biology.

8554. It would be part of the curriculum of your pupils to attend those lectures ?—They are not intending to give any lectures in connection with that department. It is purely consultative.

8555. Research work ?—No ; to give advice.

8556. But advice, of course, means on the work they have carried out at the laboratory ?—Yes.

8557. Therefore it is research in that sense ?—Yes.

8558. They do not propose to give lectures at the University College of Bristol, you say ?—No.

8559. Do you think lectures could be given in economic biology with advantage ?—Yes, undoubtedly.

8560. Supposing your institution were turned into an educational school, would you give lectures in economic biology and make that one of the branches ?—That would almost follow unless a course were given at the University College. It would hardly be worth while to have courses at both places.

8561. I quite agree with you, but it ought to be given at either one or the other ?—One or the other ; that is a very important side of fruit growing work especially.

8562. On the whole the farmers appreciate the work done by your institution ?—Yes.

8563. And they come to you for advice ?—Yes.

8564. (*By Professor Middleton.*) I gather from your evidence that the type of educational course you have in your mind is a practical course in improved cider making similar to courses that are given in cheese making in a cheese school. I did not understand you to mean that you thought of developing a theoretical course at the Institute ?—We might, perhaps, have to run two courses to suit the two classes of pupils we already take—the pupils who do scientific work in the laboratory and those who are purely working pupils ; the same course would hardly do for both.

8565. The courses for young farmers would be of a

practical nature ?—Yes, with just sufficient of the theoretical side to enable them to grasp things.

8566. Such an amount as could be given them in the five or six weeks' course that you mentioned ?—Yes.

8567. (*By Lord Moreton.*) Besides the actual manufacture of cider a great deal of instruction would have to be given with regard to fermentation and so on and when the cider began to work. Would you attempt to teach not only the manufacture but the after operations connected with the manufacture ?—Yes.

8568. A very short course would not give you time enough to cover that, would it ?—Not the short course.

8569. (*By the Chairman.*) We have had evidence to the effect that on the continent they have what is called a winter horticultural school, that is a school where two winter courses are given, each for about three or four months, where both theoretical and practical lectures are given, not to persons who require high scientific training, but to people who are intending to do the practical work ?—Yes.

8570. So that that shows the importance which is attached to a regular course of training—as I say, they have two winter courses ?—Yes.

8571. I think that shows the importance of giving as much time as one possibly can to the pupil ?—Yes, certainly. As much time as would be practicable.

8572. Of course your fear is that they would not attend. I quite understand that, but if they could be got to attend you would have no difficulty in organising courses for that kind of individual, at least for four or five months in winter ?—No.

8573. You would see no difficulty in that ?—No. From October, say, until the end of March. In that time they would see most of the inside part of the work.

8574. Quite so ; and you would have them in the summer in the plantations ?—Yes.

8575. (*By Mr. Latham.*) Would not it be almost impossible to found a six months' school for teaching the branch that you are now in, for dealing with cider work and fruit growing work ?—A person would not have more than covered the whole ground during six months. A year is necessary to cover the ground in fruit culture.

8576. It would be a new departure, at any rate ?—Yes. Of course there are no facilities at present for it.

8577. You would have to reorganise the whole place for any thing of that sort ?—Yes. I think the whole system would have to be reorganised, although it is not so much a question of reorganisation as a question of the lack of funds.

EIGHTEENTH DAY.

Tuesday, 18th June, 1907.

PRESENT :

The LORD BARNARD (*in the Chair*).

Lord MORETON.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor SOMERVILLE, D.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. W. ANKER SIMMONS, called and examined.

Mr. W. A. Simmons.

18 June, 1907

8578. (*By Lord Barnard.*) You are a surveyor ?—Yes.

8579. I see you are a chartered surveyor ; will you tell us what that means ?—A member of the Surveyors' Institution.

8580. You are a member of the firm of Messrs. Simmons & Sons, land agents, valuers and auctioneers, of Henley on-Thames, Basingstoke and Reading ?—Yes.

8581. You have had a considerable number of years' experience ?—I have. I have been a partner in the firm since 1883, and I went into the office in 1873.

8582. Over 30 years ?—Yes.

8583. Your business extends over a great many of the southern counties ?—Yes ; we have land in ten different counties that we are agents for.

8584. Naturally during that time with those facilities you have acquired a considerable insight into agriculture in the south of England ?—Yes, I have had every opportunity of acquiring that.

8585. Have you farmed any land yourself ?—Yes ; we

never farm less than 2,000 acres, sometimes more; at the present time it is a good deal more.

8586. Is that land for which you are agents belonging to trustees and so on?—Yes. I do the whole thing myself the farming and the buying and selling—everything.

8587. You are a member of several associations?—Yes, I am a member of the Farmers' Club, and on the Council of it, and secretary of the Berks and Oxon Chamber of Agriculture. I have taken a keen interest in agriculture all my life.

8588. You are in close touch with farmers over a very wide area?—I am.

8589. You take a great interest I believe in the question of scientific and technical instruction in agriculture?—Yes, I am naturally very much interested in it to see to what extent it is likely to benefit agriculture.

8590. You have formed certain definite opinions on the subject?—I have.

8591. Perhaps you would just briefly state to the Committee what those opinions are?—Briefly my opinion is that the inclination is to pay too much regard to science and not enough to practice. Of course I am looking at the question entirely from a farmer's point of view, and while I admit that the education which is given at our agricultural colleges must be of great benefit to agriculture, not so much from the number of students it turns out, but by reason of the great attention it has called to agriculture and the impetus it has given to intellectual farmers to seek for information which previously they did not seek for, yet, looked at from a farmer's point of view, and particularly from the point of view of the way in which it is likely to benefit the rising generation of farmers, I cannot help thinking that it might be possible to give a more practical education with not quite so much science. It is all very well to aim at making every farmer a chemist and a botanist and a geologist and a veterinary surgeon, and so on, but it would happen in a very very few cases that a man would become thoroughly well equipped in all these departments, and what you really want to try to aim at I think is to induce the rising generation of farmers to see that up to a point science can help them to a very great extent in their practical lives.

8592. Does your criticism extend to any particular form of imparting scientific agricultural education?—If you take chemistry for example—

8593. I do not mean the subjects of instruction; I mean any particular form of institution. Which form of institution do you think is least useful?—I think the big institution is the least useful, the big colleges, and I think the most useful is the small school like Basing. That is a school I have had under my notice for some time, and I do not hesitate to say that from a practical point of view the student at Basing gets an education which is of more value to him as a farmer than the student who goes to Reading or Wye.

8594. Would you like to see more schools of the type of Basing established?—I would. I think if you had schools of that character where students could get a short course of instruction it would be of the greatest benefit, but it is useless to think that you are going to get the ordinary farmers to send their boys to an agricultural college for a year or two years. I think if you could get a short course of scientific instruction to be given at times in the year when little would be doing on the land, say in November, December, January and February, you would do a great deal of good.

8595. You would agree with all the previous witnesses probably, and I think it is the opinion of most of the Committee, that practical work on a farm is essential?—Absolutely.

8596. In your opinion it should be the main part of the young man's upbringing?—I think so. I am quite sure of this, speaking as a practical man and one who has been brought up in a very practical school, that you can only learn farming on the land; you cannot learn it by book any more than you can learn engineering, for instance, by book.

8597. I suppose you would admit that the application of science to practical agriculture is possible and advantageous?—Yes, certainly.

8598. Would you agree with me that in order to obtain that information you must have institutions for higher work in agriculture?—Certainly.

8599. You say later on in your *précis* that you are of opinion that great assistance could be afforded to young

farmers if courses of lectures were given in the market towns connected with their farms?—Yes.

8600. Of course you are aware that that has been practised in some counties to a very considerable extent?—Yes, it has, and I have seen a good deal of it. I had charge for some time of a migratory school in dairying. But the fault of those lectures lay in the fact that they sent the wrong men to lecture. If you send a man to lecture to farmers you must have a man who shows to a farmer at once that he knows what he is talking about from a practical point of view. I am speaking more of the time when lectures were first started; I myself have been present at lectures given by men who proved to every practical man in the room before they had been speaking five minutes that they did not understand what they were talking about except from a strictly scientific point of view.

8601. You, I notice, also lay stress upon the value of the lecturer thoroughly understanding what he seeks to teach and how to impart the knowledge he possesses?—Yes. That, of course, as you know, is most important; there are a great many men who know a great deal but who cannot teach it, and, I think, quite as much attention should be directed in instructing the instructor as to how to impart the knowledge he acquires, as to any other point.

8602. Men must be trained as instructors somewhere?—Yes, and, I think, that should be part of the duty of these large agricultural colleges where there is every facility for properly training them.

8603. Do you know any of the sons of large farmers, we will say, who have been educated and have become teachers?—No, I cannot say that I do, personally.

8604. Do you know, as a fact, that a very large number of these teachers have come from farms and have been brought up on the land?—Yes, I know that is so.

8605. Do you think it is desirable and possible to extend that?—Yes; they would have much more weight with those whom they sought to teach than the men who did not possess that advantage. As a proof of what may be done in the way of lectures by a competent man, I may say that Mr. Percival, of Reading College, who, as you know probably, is the director there, has done a great deal of good by giving lectures on stated subjects on Saturday afternoons at Reading, that being the market day, and a great many farmers and men you would hardly expect to see there have attended those lectures, which are extremely able ones and give a lot of information on subjects which are calculated to be of use to a farmer.

8606. Do you not think it is possible, owing to the fact that 20 or five and twenty years ago there were hardly any means by which a farmer could obtain information outside his own knowledge and that of his immediate neighbourhood; and that the system, or rather lack of system, sprang up of farmers relying upon themselves and upon local knowledge, that that system has got to be broken down and that it will take time?—Yes. Of course, it is impossible even yet to gauge the benefit of what has happened in the last 10 or 15 years because a man must have time to develop. You do not make a farmer in 20 minutes, it takes years for a man to prove himself to be a success or otherwise, and the chances are we would be better able in 10 years' time to say whether the result of what has been done during the last 15 or 20 years is favourable or not than we should be now.

8607. Is it your experience that the value of this information, whether by lecture or otherwise, is being more and more appreciated, and that farmers are more and more inclined to listen to this kind of thing and to absorb it?—Yes, they are. I was talking to a young farmer last night who farms very largely. I mentioned to him that I was coming here to-day, and he told me that he was only expressing the wish a few days previously that he had been born a little later so that he might have had the advantages which the young men have got now of acquiring a certain amount of scientific knowledge in regard to farming which undoubtedly would be of much use to him. He is a man of my own age who is quite young enough still to avail himself of learning anything that would be useful to him and would do so. He is just the kind of intellectual man who would attend a course of lectures that would be likely to be of benefit to him.

8608. Of course, you will agree that among farmers, as among all classes of the community, intelligence varies?—Very much.

8609. And some men are much more capable of acquiring and absorbing scientific information than others?—

Mr. W. A.
Simmons.

18 June, 1907

Mr. W. A. Yes. I think that applies, perhaps, to farming more than anything else.

18 June, 1907 8610. Perhaps, you will also agree with me that the men, unconsciously no doubt, influence their neighbours ?—They do.

8611. So that really and truly the spread of information is very desirable ?—It is most desirable.

8612. You express an opinion on the financial side of the question ?—Yes. As you know, that has been one of the worst points of the farmer's life. They are wretchedly bad book-keepers ; nine-tenths of the farmers keep no proper system of accounts at all. I have done, in my own neighbourhood, all I can to induce farmers to keep proper accounts. I have offered to make annual valuations for them at a nominal fee in order to induce them to do it, but, although some have started, they will not keep it up for any length of time.

8613. Do you not think the practice of keeping accounts, particularly among the larger men, is growing ?—Yes, undoubtedly it is growing, but the farmers, as a rule, are very slow, I must say, to improve in that way.

8614. That is no reason why those who are interested in the subject, such as landlords and land-agents, like yourself, should not go on trying to impress upon them the necessity of it ?—No, and I, personally, never cease to impress the necessity of it. I do not for a moment advocate very elaborate accounts because farmers would never keep them, but a farmer ought always to be able to know where he is financially, and to be able to ear-mark any particular loss so as to know at once where the loss is and to remedy it if possible, but very few men can do that at present.

8615. So as to be at once able to estimate the cost of a particular crop, and so on ?—Yes, and what the purchase of certain manures, and so on, has done, whether he has gained or lost by it.

8616. On the question of public finance, what is your opinion with regard to the sums which have been spent by county councils ?—I think there has been a great deal of money wasted on such subjects as bee-keeping and horticulture ; a great deal of money has been spent in England for such purposes—amounting to about £90,000 a year, I think, now. The colleges only get less than half that amount, between £30,000 and £40,000 a year or something like that, and I cannot help thinking that it would be possible to get more for the money that is being spent at the present time.

8617. You will admit that we are still going through an experimental stage ?—Yes.

8618. Therefore a certain amount of money must inevitably be wasted during such a process ?—Yes, that is bound to happen.

8619. Of course one of the objects of this Committee is to see how that waste of money can be prevented ?—Yes, to find out the weak parts of the scheme.

8620. Of course by the word waste I do not mean, and you do not mean, that money has been deliberately thrown away, but simply that some people are of opinion that the results do not justify the expenditure ?—Exactly.

8621. You, of course, are not of opinion that lectures on bee-keeping and so on are useless ?—No, not useless, but I rather think too much money has been spent on that and such like subjects.

8622. Do you think a young lad, a farmer's son, should go to a secondary school ?—An ordinary farmer's son I think, would get all the information he wants either by a short course at a school like Basing, or if he could not avail himself of that, by having the opportunity of attending a course of lectures in his market town to which he could easily get, given by men sent out by the larger schools.

8623. I was referring more to his general education ?—Well, I do not know—looking around and thinking of the men who have done best in agriculture all through the last five and twenty years, which, as you know, have been extremely trying years, I am bound to say that the men who have done best have been the men who have had a sound education and went on to their fathers' farms at the age of about 16, and stuck there. I doubt very much whether secondary education, speaking of an ordinary farmer's son, is necessary. Of course if you had got a particularly sharp lad who was capable of going ahead, by all means let him have the opportunity of going higher.

8624. You have a certain number of secondary schools in your district ?—Yes.

8625. I suppose a large number of farmers' sons go to

those schools ?—Yes ; at Reading, for instance, there is a very excellent grammar school with very low fees, and at Henley also there's a very good one.

8626. You have a suggestion as to boarding out agricultural students with practical farmers approved by the county councils in their respective districts. You are of opinion that a considerable portion of the money now devoted by county councils to agricultural education would be far better and more profitably spent in that way ?—Yes. I do not know whether that is possible, I have never heard it advocated, but what I feel about it is this : if I take one or two pupils I can teach them something, but if I take a dozen I can teach them very little. If a farmer has got charge of one or two pupils the pupils can always be at work where the farmer is, and he has every opportunity of teaching them their business. They would learn more on a farm like that under a good practical farmer in one year—for of course they must be there for a year—than they would learn in an agricultural college, from a practical point of view, in three years.

8627. That is done occasionally now, is it not ?—I do not know of it being done publicly.

8628. Privately, I mean ?—Yes, it is frequently done privately. Three or four of the best tenants I have have sent their sons out in that way, and I frequently get applications from tenants asking my opinion as to whom they should send their sons to.

8629. A public authority might have some difficulty, might it not, in selecting good instructors ?—No, I do not think the county councils would have the slightest difficulty in that respect, because you have men who know everybody in the county on the councils, and I do not think there would be the slightest difficulty.

8630. How would you select the pupils ? You would not give scholarships to everybody who came along ?—No. I am afraid I have hardly thought it out sufficiently to answer that question with care.

8631. (By Lord Moreton.) Have you ever thought whether anything could be done besides teaching the young farmer as regards giving the labourer a chance of working himself up a bit—I do not mean to make a man of science of him, but to give him a sort of smattering of knowledge which would make him a better herdsman or stockman, or even foreman perhaps ?—Yes, that is a subject I have taken very keen interest in. I have for years past run a little society where we offer prizes every year for good work in the way of hedging, ditching, rick-building, thatching, and ploughing, and to shepherds for the best results from their flocks, and herdsmen and so on. In this little society, which I have absolutely worked myself now for 20 years, we give valuable prizes every year for that kind of thing, and it has had an excellent result in our district.

8632. Does that affect the younger men who are coming on or the men who are actually at work ?—I am glad to say now we are getting much more interest taken in it by the younger men. We had rather a slump for two or three years ; we had great difficulty, for instance, to get young fellows to enter for the ploughing, but during the last two or three years we have had much better entries, and there is a greater indication of a desire on the part of the younger labourers to take an interest in their work. It is difficult to get young lads now to make a hedge, or to thatch a rick, but I think, if inducements could be held out to them to take an interest in good work connected with agriculture that a vast amount of good might be done in that way.

8633. In the case you mention I take it it is more a question of encouragement than of instruction ?—Yes, but of course the encouragement produces the instruction to some extent.

8634. Would you tell us how ?—The farmers themselves take a keen interest in the Society, and I think they look after their men rather better than they used to do, and instruct the men more themselves. They all take a very keen interest in it.

8635. The agricultural labourer, in fact, understands that he can better his position by marching with the times and getting what education he can on the subject ?—Yes.

8636. I should rather like to know how you encourage the herdsmen. I know how the shepherds are encouraged ?—I think perhaps when I included herdsmen I used a term that I should not have used. I do not think that we have a class for herdsmen. Of course the shepherds are judged by the number of lambs they produce from their flocks by a certain day.

8637. In a dairy district it would be an advantage if you

Mr. W. A.
Simmons.
18 June, 1907

could give prizes for operations in connection with the raising of horned stock, would it not?—It would.

8638. Have you had any experience of any farriery work being carried out in your part of the world?—No, we have not.

8639. As regards book-keeping, which you mentioned just now, I entirely agree with what you said, but I suppose the book-keeping you would advocate being taught would be essentially of an agricultural kind, and not the usual commercial book-keeping?—Exactly. The mistake is in trying to make it too complicated. For instance, I have ruled up a book myself which we use on a great many properties we manage ourselves, and which is absolutely simple, and yet at the same time will give you any information you want to know.

8640. I daresay you know the kind of form the farmer has to fill up for income-tax purposes?—I do.

8641. If a farmer had sufficient knowledge to fill up such a form as that properly, that would be sufficient for book-keeping purposes?—Quite.

8642. (*By Mr. Latham.*) I think it would be very difficult for you and me to get very much abroad on the subject of practical farming?—I think so.

8643. At the same time you would not object to a man having a little scientific education?—No; I think it is highly necessary.

8644. To what extent do you suggest?—I think a man ought to possess a sufficient knowledge of chemistry to be able to know what sort of manure would be good for any particular soil and so on. I think the mistake is to try to make an agricultural student a chemist; they go through such an extensive course of chemistry which would be all very well if you are going to be a chemist, but which is quite unnecessary for a farmer's life.

8645. I think the Committee may take it from your evidence that you are not altogether against allowing a man to have some scientific training if practical farming was kept in the foreground?—Certainly not.

8646. You and I made a very instructive visit two or three years ago to Mr. Prout?—We did.

8647. Do you not think most of us learned a good deal down there?—You learned enough to induce you to try to imitate what he is doing—at least you made an application to me as your agent to be allowed to farm a portion of your farm as you liked, which I at once gave; I do not know that the result was unsatisfactory.

8648. All I can say is I never saw corn looking better in my life than mine did yesterday when I went to have a look at it?—It depends very much upon the soil. If we were to try to practise Mr. Prout's system on the hills or light soils in South Oxfordshire, we would be in the workhouse in two or three years.

8649. But do you not think we found it generally a very instructive visit?—Yes.

8650. He is farming on scientific lines?—Certainly. It is his knowledge of manures and what kinds of manures to use on certain soils that has enabled him to acquire that success.

8651. So far as Mr. Prout goes you would like agriculturists generally to have such knowledge?—Certainly; that is the kind of chemical knowledge that I think a farmer ought to possess.

8652. It is difficult for him to get that knowledge unless he is in touch with some scientific centre?—Of course you have one great advantage in these scientific centres, that you give every farmer the opportunity of ascertaining those things. If he is not capable himself, by applying to these colleges he could have a man sent there who could tell him what is the best thing to do and the best manure to use on certain soils and so on.

8653. You know exactly the terms of reference to this Committee?—Yes, I have the terms of the reference before me.

8654. If these opportunities were offered to the farming class generally, whether they are large farmers or whether they are small farmers, if they were to take it on the lines which should be offered to them it would be very beneficial to them?—Certainly.

8655. With regard to the lectures, as to which I agree with almost every word you said, especially as to the lectures which were delivered in Reading last autumn, no doubt they were very beneficial to the farmers?—They were most beneficial. I have heard a great many farmers say that they derived great benefit from them.

8656. On those lines alone if they were carried out you consider it would be very beneficial to the agricultural interest?—I do.

8657. Are you not willing that there should be much more of the money that now is in the hands of the county councils allocated to the agricultural interests?—Certainly.

8658. What is your objection to the expenditure of the money that has been spent on bee-keeping?—I doubt very much, as I say, whether the result justifies the expenditure.

8659. Have not a great many agricultural labourers and cottagers benefited very much by the teaching of bee-keeping?—I do not say there has not been a certain amount of benefit, but it always has appeared to me, like poultry farming, that there has been more money spent with regard to the teaching of such things than is altogether justified.

8660. I could name a great many instances now where cottagers produce large quantities of honey, and one I know in particular who produces more than 100 lbs. of honey a year, and if they can make 10d. a lb. out of it, it helps to bring in an income?—Yes, I do not deny a certain amount of instruction, but I cannot help thinking that there has been more money spent in that way than the result has justified.

8661. I suppose the remark and the feeling generally is that it often takes more to teach those things than the outcome justifies?—I suppose it does.

8662. With regard to the cottagers' gardens and the gardens attached to the schools, do you not think that there has been much good done by teaching?—Yes, but I will tell you what I think with regard to that; that a system of offering prizes for good gardening would have an equally good result.

8663. One follows the other you see. We have been offering prizes at our shows for the best cottage gardens and they have been very much improved by the lectures?—In the district I was speaking of we have classes as you have seen for yourself, for good gardening amongst the cottagers, and it is marvellous what they produce, but in our particular neighbourhood we have had no instruction at all, and I have had an illustration there of the benefit of offering an inducement to cottagers to produce good results.

8664. I quite agree with what you say about that society who have done me the honour of asking me to judge for them for a good many years, and I agree that there would be a good deal of good to come from it, but that never can be brought under the Technical Education Act?—I have made applications to the county councils more than once and I fail to see why the county councils could not allocate a certain amount of money every year in the direction of giving prizes to the farm labourers and cottagers for good results in their work.

8665. We are always told they cannot do it?—Yes, I know; that has always been the answer I have received but I do not see why they should not do it. I am quite sure it would have excellent results if they did.

8666. That would improve the status of the labourer?—It would improve the status of the labourer; that would be the result of it, of course.

8667. Do you consider the general education of the ordinary farmer's son is sufficient?—I think the ordinary grammar school education is quite sufficient to fit an ordinary boy for a farming life.

8668. Without any scientific knowledge?—He should obtain a certain amount of scientific knowledge afterwards.

8669. Speaking of the ordinary courses, do you not think that they only give a smattering of knowledge and do not go scarcely far enough?—No, I think if they were judiciously arranged that a young farmer would be able to learn, taking an ordinary course, practically as much as he would be required to know to conduct his business.

8670. Knowing you so well, and knowing what a practical man you are, I would be glad if you would kindly tell us what that little should be?—I have already said the kind of education from a chemistry point of view that I would advocate, and with regard to botany for instance a boy should be thoroughly taught all the different grasses and plants, I am rather inclined not to throw the net too wide. I think every farmer, of course, ought to possess an elementary knowledge of veterinary science. I mean to say such a knowledge as would enable him to deal with any simple case.

8671. In the nature of first-aid?—Exactly, very much

Mr. W. A.
Simmons.
18 June, 1907

that kind of education ; up to the point at which first-aid is given to those who are taught it—the police and so on.

8672. Are you in favour of demonstrations and experiments being carried out in the county?—I am strongly in favour of demonstrations. When I was agent to Mr. Sutton at the time he was farming a good deal, we had excellent results from the experiments we made with different manures on the same crop of grass. We used to take part of the park or part of an annual grass and set it out in quarter-acre lots and apply different manures to them and then invite the farmers to come and see the result. I am quite sure that resulted in a great deal of good.

8673. That to a certain extent you would call scientific education?—Of course—that is scientific education.

8674. You are not against farm pupils if they go to practical farmers?—No.

8675. You think that would be a very great advantage?—Certainly.

8676. It is not altogether satisfactory that a son should be brought up in the hands of his father?—No, I advocate a boy getting away. It is far better for a boy to go on to another man's farm; he gets new ideas. There is too much an idea on the part of farmers to do very much as their fathers did, without ever questioning whether it is right or wrong.

8677. Would you advocate scholarships being offered by the County Councils to farmers to take these young lads?—Certainly I would.

8678. After they have been there for two or three years, would you object to their getting a little science before beginning business for themselves?—No, that is just what I think they want. If a man had two or three years with a good practical farmer and then had a chance of attending a course at such a school as Basing, I think he would be well on his road to becoming a successful farmer.

8679. You have almost forgotten the great improvement in horse shoeing that has taken place in your district when you say you have not much knowledge of farriery?—It so happens I have not had much to do with that. I was speaking from a personal point of view.

8680. But still you do know that a great deal has been done in the way of farriery instruction?—Yes, the prizes given for shoeing for instance have had excellent results.

8681. The county councils help that a good deal?—Yes, I think that is a most important part of the work.

8682. (*By Dr. Somerville.*) You are rather down on bee keeping. As a matter of fact do you know what an insignificant sum is spent annually by the county councils of England and Wales for instruction in bee keeping?—I am afraid I do not.

8683. Would it surprise you to find that the sum has never reached £1,300 a year during the last five years in the aggregate for all the county councils of England and Wales?—I am surprised to hear that; I thought it was much more.

8684. I would also call your attention to the actual figures in regard to what is expended on agricultural education in colleges. I think you said that the total sum was about £100,000?—Something under £90,000.

8685. As a matter of fact it is about £90,000. Then I think you said that about £40,000 was given to the colleges and schools, whereas it has only once reached £30,000 during the last five years, and it is now about £26,880?—I was speaking from memory; I thought it was more.

8686. It has often been said that the presence of large numbers of bees in clover fields is disturbing to the farmers' stock. Do you think there is anything in that objection?—I have never heard that.

8687. So that you would not discourage the keeping of bees by the labourers through any fear of the farmers being injured?—No; and I would encourage the labourers to do all they could to increase their position and to better themselves from a financial point of view. I think the whole secret of keeping men on the land lies in that direction.

8688. With regard to farm book-keeping, I think most people are agreed that farmers might in many cases keep more accurate books, but partly the lack of knowledge and partly the trouble involved seems to deter them. Might I explain what is done in Germany and possibly in other Continental countries and ask you whether with your knowledge of farmers and farming you think some such system might be adopted in this country. The Agri-

cultural Society of Germany, which corresponds to our Royal Agricultural Society has a section which is called the section of book-keeping, consisting of expert book-keepers and valuers, and the Society asks its members to supply that section with the actual figures referring to the expenditure and receipts on their farms, and the Society keeps the books for the farmers, and at the end of every year, gives them a true statement of their financial position. That has been imitated by private firms also in Germany, and it is not uncommon for private firms to have their books kept by farming accountants. Do you think our British farmers would regard such a suggestion as that with sympathy and would be prepared to supply some central authority with the figures and allow their books to be kept for them?—No, I do not think they would for a moment. I am perfectly certain they would not.

8689. Not even if the figures were given to a thoroughly reliable and reputable society that might be depended upon not to allow the figures to go outside the office or beyond the individual keeping the books?—No; I am afraid you would never get the ordinary farmer to believe that those figures would not leak out somehow or other. They are very suspicious about their own accounts.

8690. Does it surprise you to know that a land agent a little further west than yourself and in a large way of business does, in fact, send the figures relating to the farms under his charge to Germany, and gets an expert there to keep his books?—I am rather surprised to hear that, and it seems rather a strange thing from a land agent's point of view.

8691. (*By Mr. Medd.*) In speaking of the lack of practical instruction you were referring I suppose mainly to the big collegiate centres—such as Newcastle, Leeds, Cambridge, Wye, Reading, and so on?—Yes.

8692. Do you think it is practicable to combine practical instruction with the scientific instruction at such institutions?—I do not.

8693. That is the difficulty. Experience shows that you cannot combine the practical and the theoretical work at an institution of that sort?—I quite agree with that.

8694. I do not know Scotland at all, but I have an impression that the majority of their students have been on a farm before they go to a college. Do you know whether that is the case?—I do not know whether that is so, but that is what ought to happen.

8695. Or possibly you may think that any one of these institutions before granting its diploma should insist that the student after completing the college course should pass a year upon a farm?—I think he ought to go to a farm first.

8696. That is, I believe, the best way.—Yes.

8697. In the case of the class of men who attend these colleges it would be very difficult to enforce residence on a farm to begin with, because many of them go for a variety of reasons, and you are not dealing with them as farmers. Do you not think that all your complaint against agricultural education as given to-day comes from want of organisation; that there are too many gaps; in other words that nothing or little is done for the labourer and the small farmer?—Yes, that is so.

8698. That these institutions cater for the large land owner and men of that type mainly?—Yes, and for land agents.

8699. Yes, men who are going to become surveyors or land owners, much less than for those who are going to become actual practical farmers?—Very much less.

8700. You have spoken of Basing?—Yes.

8701. I take it you would like to see a number of schools of the type of Basing?—I would.

8702. Those are what we term technically intermediate schools?—Yes.

8703. Where the instruction is very much more practical than it possibly could be at a collegiate centre. When the witnesses from Hampshire were here they expressed their readiness to enlarge Basing and make Basing the intermediate school for the group of counties centred round Reading. Would you be prepared to support that?—I would.

8704. The difficulty is this: that each county, with the difficulty that they have of obtaining money to-day, would be unable to establish and maintain an institution of that sort of itself. There is such a centre in Cumberland

and yours might be developed at Basing. You would be prepared to support such an institution?—I should. I should think it would have excellent results.

8705. I hope you will establish one. You would have Basing as the intermediate school and the best pupils would move on from Basing to Reading if they had means to do so?—Yes.

8706. Of course, as you know there are a large number of boys who are engaged in farming whose education must necessarily close when they are at 17 or 18. They cannot go on any longer?—That is so.

8707. With regard to short courses, what would you consider the maximum time that a lad should attend for?—I think it ought to be for about three months.

8708. You might do it for rather more, might you not—for about 21 weeks. That is a thing that is, practically, non-existent in England, and you might advocate for twenty to thirty-five weeks, say, at such an institution as Basing, not at such an institution as Wye or Reading. The grade there, I imagine, you consider to be distinct and too high?—Yes.

8709. I quite agree with you. Now in regard to the fault you find with bee-keeping, does not the objection rather arise from the want of organisation in the lectures? You do not object to bee-keeping as such; what you object to is the spasmodic lectures that are given and the ready money which is frittered away here and frittered away there and the lack of system?—There is no doubt it is the lack of system that has caused what I complain of.

8710. You live in Oxfordshire?—Yes.

8711. I hope your counties will in future annually meet and devise a scheme to cover the whole of your area so that that lack of system may be obviated. I may say that the witnesses we had here from Reading and Hampshire were quite prepared to do that. With regard to the boarding out and apprenticing of good lads, have you ever known where that has answered well?—Yes, one of our tenants has had pupils for the last 15 years and they have done very well indeed.

8712. The weight of past evidence seems to show that as a system this breaks down, although it may succeed in individual cases, that is where you have a satisfactory lad and a farmer whom you know and can trust. Have you read Mr. Jenkins' Report to the Royal Commission, Technical Instruction, 1884?—I have not.

8713. Or the evidence given before the Irish Recess Committee?—No.

8714. My impression is that apprenticeship cannot be relied on. You do not happen to have read the reports referred to?—No, but I should be very strong about not allowing a farmer to have more than two pupils at a time; directly you get more than two pupils the chances are they will not learn anything like they would if there were only one or two.

8715. And, of course, you would take special steps to see that the farmer was a man who was personally known to you, and in whom you had confidence?—Yes. The class of men who advertise for pupils, for instance, as a rule are the very last men who ought to have them.

8716. Quite so. You have done a great deal in Oxfordshire for the promotion of the cultivation of allotments and gardens?—I have tried to do so.

8717. I think, through the County Council, there are prizes given and shows held periodically?—Yes.

8718. And a considerable amount of work in that direction has been done round Banbury?—I believe so, but I have had no personal experience of it.

8719. I was going to ask if you could give us any information with regard to that?—No, I am not in the neighbourhood of Banbury. I have a good many acres let out in allotments there, but I have no personal experience of what has been done at Banbury, and I cannot give you any information.

8720. What has been done to stimulate them, by way of shows and prizes?—No, I cannot give you any valuable information on that point.

8721. (*By Lord Barnard.*) You told one of the members of the Committee just now that the courses in chemistry were too extended. I suppose you were thinking of some particular institutions and not of others?—I was thinking more of what takes place at Reading and Wye.

8722. That does not apply universally?—No.

8723. There are institutions such as the Basing School where you would not consider it is too extended?—No; I think the Basing course is just what is wanted.

8724. I see in the Government Report here that the subjects at Basing include sciences relating to agriculture, and in the case of a somewhat similar school at Newton Rigg in Cumberland, farm chemistry is one of the subjects; the composition of air, water, soils, soil food of plants, manures, and so on. That requires to be taught by a man who has had considerable scientific training?—Yes.

8725. So that in order to supply teachers of that description there must be some teaching in chemistry given somewhere?—Yes, but it would only be at places such as Wye and Reading that you would want anything like such an extent of instruction in it.

8726. So far as your experience, derived principally from the Basing School, goes, in the case of working lads there you think too much chemistry is not taught?—I do not think it is at Basing.

8727. I should like to ask you to explain a little further what you said about Mr. Prout's experiments. You said it would never do on the light soils of South Oxfordshire?—That is so.

8728. Should it not be one of the objects of instruction in scientific agriculture to apply the necessary science and knowledge to the varying soils with which you have to deal, having regard to climate, aspect, and so on?—Certainly.

8729. It does not follow that because Mr. Prout's system would not do in South Oxfordshire that you should not have any scientific application of knowledge?—Oh dear no, I thought I had made it plain that up to a certain point a farmer should have scientific education.

8730. Then as to the demonstrations and experiments to which you alluded, would you not agree that it would be a good thing that those should be carried out by experts at higher colleges like Reading?—Yes.

8731. In order that the information obtained by purely scientific men might be available for practical men?—Certainly, I think that would be the proper way of carrying them out.

8732. I do not know whether you are one of the Correspondents of the Board of Agriculture?—I am not.

8733. Do you know anything about them?—No.

8734. Have you any opinion as to their usefulness?—I am afraid they are very often men who do not know very much about the practical side of the question.

8735. Do you know any of them in your district?—No, I do not. I have often wondered who has supplied the information one sees in the paper.

8736. Dr. Somerville asked you a question about the figures in this Report?—Yes.

8737. This is a Report which should be in the hands of gentlemen like yourself who take a great interest in this subject. Perhaps you do not know of it, do you?—I am afraid I do not.

8738. Would you agree with me that the principal part of the duties of an Agricultural Correspondent should be to bring this and the numerous other publications of the Board of Agriculture to the notice of those interested in agriculture?—Certainly.

8739. To conclude I would ask you whether the opinions you have put forward represent your own individual views or whether they represent not only your own views but the views of those people with whom you have come in contact in your neighbourhood?—I believe they do. My views are based on my general observation and on what I have heard farmers say. I am constantly in touch with farmers and talking with them on all the subjects of the day, and it is upon that frequent intercourse with them that I have formed the opinions that I have stated here.

8740. (*By Mr. Medd.*) Your objection, I take it, is not so much to the existing institutions, but to the absence of institutions suitable for the small farmer?—Yes.

8741. (*By Mr. Latham.*) With regard to the institutions that have been talked about, do you not consider if there was a farm attached to them it would be of great value?—Yes, but it would have to be a big one; I do not think a small farm is any use. Take the one at Reading, for instance, you cannot teach men farming on 150 acres of land: I think that is about the size of their farm?

8742. I was more particularly speaking of the scientific part of farming—of a farm where experiments could be

Mr. W. A.
Simmons:
18 June, 1907

Mr. W. A.
Simmons.
18 June, 1907

carried on?—You certainly must have land where experiments can be carried on. All colleges should have that, but it is impossible to teach young men farming on a farm of only 150 acres.

8743. We have had before us a very large number of land agents and surveyors and people who had got a good deal of beneficial knowledge from scientific institutions. Is that your experience?—Yes.

8744. You would not favour that sort of institution for

people who were going to be farmers?—If my son were going to qualify for a land agent, I should certainly send him to either Reading or Wye, or one of the other colleges for a year. The education you get at Wye and Reading and such places is far more likely to enable a land agent or land agent's son to qualify and to know how to look after property than to be of use to the ordinary farmer. You do not get at the ordinary farmer and particularly the small farmer with these big institutions.

Miss EDITH BRADLEY, called and examined.

Miss Edith
Bradley.

8745. (By Lord Barnard.) I do not know whether you are acquainted with the terms of reference to this Committee—no doubt you have had a copy of it?—Yes.

8746. Therefore you know what it is we are enquiring into?—I do.

8747. I understand you are prepared to kindly give the Committee your views on the subject of agricultural education for women. You have taken a great interest in that subject for a good many years past I think?—Yes, I have for ten years.

8748. Have you actually practically been working at agriculture?—No, not actually doing the work, but I have been organising it for other people.

8749. You are not a mere thinker on the subject, not an abstract reasoner?—No, I am quite a practical person—and have been from the beginning.

8750. Perhaps you will kindly inform the Committee, as briefly as possible, what the work actually is with which you have been personally in touch?—I was for seven years Warden of Lady Warwick Hostel and of her College when it was moved to Studley Castle; and I had the privilege and pleasure of initiating the scheme under which the Hostel was founded—"the Agricultural Scheme for Women." I resigned just about two years ago, and since then I have continued my interest in agriculture, although watching it more from the point of view of village life, and farmers' and market gardeners' work and interests.

8751. I should like to ask you if you would kindly tell the Committee what opinions you have formed as to the work done by the Warwick Hostel—what the value of it was to the public?—I think it was very valuable work indeed; I have every reason to think so, as I hope I shall be able to show you from the results which I have; and also because I think that it was the association of women in the work of agriculture which brought it so prominently before people, not only in England, but on the Continent and in the Colonies. We had a magazine which ran for seven years which was devoted exclusively to this subject of Women and Agriculture, and although its circulation was of necessity limited still it was a fairly wide one, and those who took the magazine read it with great interest. Therefore I think that the founding of Lady Warwick Hostel certainly gave a great impetus to the work for educated women. That was the object of it of course, much more than for the less educated women.

8752. Are you in touch with any of those women now?—Yes, a number of them. I sent out a circular to between 80 and 90 of them only the other day, all my old students.

8753. Can you give the Committee one or two instances of women who are practically now reaping the benefits of agricultural education?—Yes, I have several here, and they are quite up to date, because I only received them within the last few days. I really sent out a circular letter in the hope that I should get responses from many of them who might wish for small holdings. I sent out two forms, one of which was to ask if they wished for a small holding, the number of acres which they proposed to cultivate, and what they could pay for rent; and the other form was for those who were already engaged in the lighter branches of agriculture. I have had ten forms returned to me filled in, which are of a very interesting nature. I did not tabulate them altogether before I came because I was not sure that that would be what the Committee would wish.

8754. I do not think we need go into the question of those who propose to take up small holdings because that is a very wide question, and rather touches another branch of agriculture. Perhaps you would mention one or two

who are actually working for themselves now. You need not give names unless you like?—That is of course just as you wish; I shall be very glad to give them. There is one who has a market garden at Cosham, in Hampshire, who has three acres of ground under cultivation and seven greenhouses; she works as a market gardener or nurseryman (or nursery woman) and she has made her work a substantial success.

8755. Did she put any capital into it?—Her father did, and she now has three sisters who have joined her. They have become one firm and are really doing very well.

8756. Is that a typical case?—Yes, I should say it was quite a typical case, because this girl was the first of my students who started for herself. When she first started she had a great deal to put up with, because she was practically boycotted by the tradesmen, so much so that they would not even allow her van in the market at one time, but she was a girl with considerable "grit" and stuck to her point, and now she is recognised as a practical market gardener.

8757. (By Mr. Medd.) Is not this lady in the habit of taking pupils. She has seven pupils, has she not?—I think almost all the ladies whose names I have here supplement their work by taking pupils.

8758. (By Lord Barnard.) Could you give the names of one or two who are subsisting purely on agriculture, that is market gardening, or any kindred industry, and who are not subsisting, or even partially so, with pupils?—I have one or two, but I must admit 8758a that they are very rare, because there is an uncertainty about the work being a financial success, and therefore they start at the very beginning by trying to get pupils to ensure making ends meet. But I have one here, a girl living in Cheshire, who has a garden of an acre. She cultivates that with fruit, vegetables and flowers. She has 60 ft. of glass, and she considers that it is a financial success—she has only been doing it for two years—because she says that she saves the wages of an experienced man, and also has pocket money for herself. There is another one who is working in Bucks. She has three acres under cultivation, and her particular work is in fruit, carnations, and small shrub propagation in cold frames only. She does not consider she has started long enough to say that it is a financial success, but she was very successful in another part where she started, but unfortunately it was a sub-lease, and she was turned out after she had built up her work and made it pay. Hitherto the results have justified the experi- 8758b ment, but I think if they are to go on justifying it, it certainly would be necessary, as I put in my synopsis, that the agricultural education for women should receive a definite place in the school curriculum, beginning from the elementary schools; now it is taken up by women as a kind of afterthought, and many of those who came to Studley and Reading were educated women in the ordinary sense of the word, daughters of professional men, but they had an absolute ignorance or a great ignorance of the ordinary way of writing an examination paper, putting things together, and work of that kind, which of course is most essential if they are to take up the work from a business point of view. All those things, business correspondence, business methods, and of course book-keeping, are most essential.

8759. If you were to tell that to the Board of Agriculture might not they say: "That is a matter you should tell to the Board of Education and not to us?" Lord Moreton suggests it might be interesting if you would tell us the class of schools from which those girls come?—Generally speaking, from private schools or secondary schools.

8760. In spite of that you say their preliminary education in the way of writing examination papers and so on

is not very good?—No, not at all good, and I might even say that the spelling is sometimes doubtful.

8761. I gather from your synopsis that you think education in agricultural subjects should be included in the curriculum of every elementary school?—Yes, elementary rural schools at any rate; perhaps I should have put that in.

8762. What inference is the Committee to draw from that?—I would like to say that I think, considering that agricultural education for women hitherto has been paid for and organised by private individuals, the results which have been obtained are very satisfactory, but that if it were looked upon as a definite side of a girl's ordinary education, provided she wanted to take it up afterwards, that the results would be more satisfactory from every point of view, and it would receive more serious attention.

8763. I can understand that from a purely educational point of view it might be very desirable that the elements of what we call nature study should be taught at elementary rural schools, and also in the high schools, but I do not quite see what you could suggest would be of advantage to the agricultural community of that education. Would it enable women to be better off financially than they are without it?—I think it would, because I think if they had this kind of education when they were girls, then when they come to one of these agricultural schools, instead of having to go back again and learn so much of the elementary part, they would be able to take full advantage of the practical and theoretical work in the subjects in which they have come for instruction.

8764. I can quite understand the point you mention of the desirability of the university degree in such subjects being open to women, because they might become specialists or scientists—there is nothing to prevent that?—No.

8765. But I can hardly appreciate the necessity of it in public elementary schools or high schools, unless you can satisfy me that there is a great benefit to be gained for women as practical agriculturists or gardeners?—I think that there is, and I think the opening is enlarging every year, and why I made a point of it with rural schools is because it is so difficult to get the ordinary elementary teachers to take the least interest in rural things. I myself tried this year to establish school gardens in my own village, and I got no assistance from the school teacher because she was not interested in school gardens, and it was very difficult, of course, in fact it proved impossible afterwards, to get the requisite number of children to take it up. But it seems to me if it were recognised in the curriculum of a rural elementary school the children would become accustomed to it from the first, and we should get teachers who would help on rural education, which is one of the things which are so necessary, is it not, instead of being outside it altogether.

8766. I do not know whether you know we have been told by some witnesses that the curriculum in the training of elementary teachers is now so overcrowded that it would be impossible to put in another subject unless you knocked something out; perhaps you are prepared to suggest some other subject in which they are trained at present that might be left out?—I think with regard to rural teachers that there are several subjects that might very well be left out.

8767. I think you have some suggestions to make as to Dutch market gardening schools?—I have.

8768. Have you studied the subject?—Yes, I have, and I have read a great deal about it. I have here a pamphlet issued by the Board of Agriculture on the Dutch Brined Vegetable Industry, and there is a very excellent suggestion in that report about the Dutch market gardening schools, which I venture to draw your attention to. I do not know whether anyone has the pamphlet, but the school is established for teaching market gardening, and the students receive three years' instruction; they seem there to try to arrange the courses of instruction to suit the districts in which the schools are situated, which seems to me a very valuable point. The object of these schools is to enable market gardeners, those who are intending to take up market gardening as a livelihood, to obtain the necessary theoretical knowledge at the least possible expense. They also have the winter courses at schools, which I think would be most helpful for boys and girls who are taking this up, because of course they are wanted on the farms in England in all their spare time during the summer; the fees in the Dutch school are very low. The buildings in one at Boscoop, which is a winter school, and also the land, were provided by the local authorities of the district, and

the garden attached to the school is nearly two acres in extent; there are seven glass-houses, and about 100 frames, and the students have an opportunity of working in market gardens in the district, which also occupy about 1,000 acres. I am very glad to find that great importance is attached to the commercial training of the students in the commercial aspects of market gardening, and in the syllabus which is printed at the end amongst a lot of other subjects, I would venture to point out these subjects which are of general interest to gardeners, sale and purchase associations, credit institutions, co-operative sale and purchase of produce, and so on. I am sure that those would be most important for people to understand, and especially women, because they have really no business training as a rule. The other subject which I would point out is called commercial correspondence and arithmetic, and it includes drafting of letters, receipts, circulars, commercial reports, filling up invoices, quantities in English, German, and French, commercial arithmetic, foreign weights and measures, mental arithmetic, business correspondence, commercial geography, commercial intercourse between Holland and the other countries, and the simple book-keeping of a market gardening business over one entire year.

8769. Have you seen these Dutch market gardens yourself?—No, I am sorry to say I have not. In view of those suggestions I would certainly urge that co-operation should occupy first place in all these schools; even with the groups of school gardens it seems to me that it would be possible to form a toy co-operative society amongst the children. They might be grouped together; the children could become shareholders, even if the shares were only 1s., with 6d. paid up, and they could have their own secretary and treasurer, and be taught to conduct their business meetings properly, and to bulk their orders for seeds, sales, and manures, and so on, and in that simple way they might learn the elements of co-operation, which from experience I have found is most difficult to teach to girls or women afterwards. I am afraid they are terribly individualistic and not at all in favour of co-operation, because they do not see the necessity for it; if it were taught in this way, not only in elementary schools but in secondary schools, I believe it would help on the whole system of co-operation immensely, co-operation being considered the one thing necessary in agriculture. I must not claim originality for that suggestion; it was made to me by Mr. Nugent Harris in talking over the practical work of co-operation, and it seemed to me a very valuable one.

8770. You are of course aware of the existence of the Agricultural Organisation Society?—Yes, I have been a member of that for many years; Mr. Nugent Harris is the Secretary.

8771. It is doing very good work?—Excellent.

8772. I am not sure that the question of the teaching of co-operation is not a little outside the exact subjects before this Committee. It certainly is not scientific instruction, and I scarcely think it could be called technical instruction in agriculture?—I thought it was included in the technical subjects now—I think so.

8773. You say something here as to the necessity for organisation of students before they leave college. Is that in the nature of a students' association?—Yes, or in the form of an organisation so that when they leave they may know that they are not going out into the world as isolated units, but that they may have some organisation which may help them in settling into their small holdings.

8774. You are speaking of women, of course?—Yes, I am now—so that they can have the help of other people.

8775. You do not think that numerous people will become small holders, do you?—Yes, I do. I think that if the Bill passes a great number of women will become small holders because I know of a great many other students who will be only too glad to take up this work if it were made possible for them.

8776. It is rather foreign, is it not, to the feeling of this country that women should be employed in hard manual labour?—I hope it is, and I hope it will always remain so, but a small holding of half an acre or two or three acres would not entail very great manual labour. I think, under the new Act it is called an allotment up to five acres, but that is rather a new distinction. Of course, 50 acres is a great deal for a woman to undertake unless she is going in for farming, but, certainly, I would not wish them to do ordinary field work. I think there is so much other work that they can do, for instance, in the way of French gardening under glass, that there are endless openings for them which would not entail the doing of hard manual labour.

Miss Edith
Bradley.

18 June, 1907

Miss Edith
Bradley.

18 June, 1907

8777. France is better off than we are in the way of climate, is it not?—I hope it has been lately.

8778. Surely a system of cultivation on the lines of the French gardening system could hardly succeed in England as well as it does on the Continent?—The French gardening system, of course, has only been started here for two or three years, but I think the difficulty which was anticipated by a number of people owing to the climate has not really been found a difficulty at all, because even down in the coldest part of Essex the other day I saw it in operation at Mr. Fels's settlement, and he was thoroughly satisfied with the results of it.

8779. To sum up your opinion, you think that more women will, in the future, be anxious to cultivate little bits of land, and that in order to enable them to do that with any prospect of financial success they ought to have greater advantages in agricultural instruction?—Yes, I do.

8780. (*By Lord Moreton.*) You think there is a considerable opening for women to take up portions of land of varying sizes and make a living upon them?—Yes.

8781. Is that founded on practical experience, or what you think may be the case?—It is really founded on practical experience.

8782. You spoke just now about the absolute necessity for definite and recognised inclusion of co-operation in theory and practice into our elementary and high schools, as well as our agricultural schools and colleges. Who would attend to them in the rural elementary schools. Would it be the schoolmaster?—I presume the county council has teachers who give lectures and instruction in co-operation.

8783. (*By Mr. Latham.*) Were you Lady Warwick's first Warden at Reading?—I was.

8784. You went from Reading to Studley, and afterwards resigned?—Yes.

8785. Can you give us any single instance where any of your students have left and managed their occupation with profit?—Without pupils?

8786. Yes, without pupils—purely from a horticultural point of view?—I have in my mind some who have done it for a short time, but through private circumstances they have not carried it on, not because it did not pay, but because family circumstances prevented them going on with it.

8787. If you cannot make it profitable, it is barely any use to go on with their education, is it?—I think that it can be made profitable certainly, and that those who are now working at it and taking pupils, could make their gardening profitable without the assistance of pupils after a time.

8788. You have, I know, exhibited at several agricultural shows the different things that have been produced at Lady Warwick's College to show the kind of things that have gone on. Has there been much interest taken in what you have shown?—What has been produced at the college, chiefly vegetables and, of course, bottled fruit. We made a speciality of that, and I heard only the other day that last year the College exhibited a great deal of bottled fruit at the Hereford and Worcester Show and sold about £47 worth of it, so I think that shows there was interest taken in it.

8789. I see you point out, in your *précis*, the necessity for agricultural education occupying a very marked and important position in the curriculum of every elementary and rural school, and every high school, with the attainment of a university degree. Do you consider a university degree a necessity for practical agriculturists?—I think that it would be an immense assistance to many, because university women and the more intellectual women, I think I am right in saying, are inclined to look down somewhat upon those who are disposed to take up agricultural work only; they think it is not intellectual enough, and that puts the agricultural women on an inferior footing in the educational world to the university women, and, I believe, more intellectual women would go in for it if they could get a degree and that the teaching would be of a higher nature, and it would be easier to obtain teachers.

8790. I am afraid that is not exactly what I want. I want to know whether you do not think raising the woman to take a university degree would not unfit her for the practical side of agriculture?—No, I do not think so at all.

8791. Should you be surprised to hear that we have evidence very much in support of what I say?—Yes, I am surprised.

8792. Do you think that women, I will put you before

men, if they are taught and allowed to obtain these degrees would be more likely than men equally educated to get a living by agriculture?—I think the necessary education and knowledge which they would have to possess to obtain a degree would lead them to much more thoughtful work, and they would realise more easily than they do now the necessity for a certain amount of scientific knowledge with the practical.

8793. Yes, but I presume you would be quite willing to put the practical a long way before the scientific?—I would have it go together.

8794. Yes, but which would you have to take the greatest share?—The practical.

8795. I am very much afraid you are flying very high when you talk about a university degree for women in agriculture?—Of course, that would only be sought for and desired by the few.

8796. And those the teachers?—Yes, but I think there would be a certain percentage of others who would wish it.

8797. Possibly a good many of us would wish it, but I do not know whether it would be of any use to us afterwards if we have to get our living by agriculture?—Of course, that is an open question, is it not?

8798. You say you do not consider that agricultural training is taken seriously enough by either teachers or students—why is it not?—Because a certain percentage of women go in for it who think that they want to do "something" (they are not quite sure what) and they decide to take a year or two at an agricultural college, and if they do not go all through the course it does not matter. So they just go, I suppose, like a good many men go to colleges, to have "a good time," and when they get there they shirk their work and are always trying to get holidays. They do not take it seriously enough, and in a private college or school which is dependent on the fees of the pupils it is difficult to keep up the standard of the best education as you would wish, because the students are not serious enough in working through the whole course; and two years, in any case, is a very short time in which to learn gardening.

8799. Does not that bring you back to my last question, as to whether the getting of this degree would be of any use at all to the practical agriculturist?—I think, of course, you get the two types of students; those who are in earnest and who take advantage of every branch of the work, and every week's work they can get out of the year. They are the successful ones to whom I can point. You were asking me if I could remember any of the students who were making a success of their work without pupils, and two ladies have just come into my mind. These two have a nursery at Maidenhead, and they have no pupils because they say they have so much to do that they cannot give time to pupils. They have only been established two or three years at the outside, and have been so successful that they have been able to buy a motor-van, in which one of them goes round and delivers the produce.

8800. That is quite true, because I happen to know the ladies you mention, although it is rather unfortunate that you should have noticed them, because they are the only persons we have had placed before us by other witnesses as having been successful. I happen to know these people and I know that what you say is true, but it is rather unfortunate that you should have brought forward the very persons that other witnesses have brought forward. Cannot you think of anyone else?—Not at this moment, without pupils.

8801. You answered my question with regard to the scholars, but you did not answer me with regard to the teachers. What I want to know is why the teachers do not take this up seriously. You say you do not consider that agricultural training is taken seriously enough by either teachers or students. I can understand the answer so far as students are concerned, but it is rather difficult to understand it as regards the teachers?—I meant more especially the students. They are taken at the gardening schools, and are taught what they think they wish to know, but if the student wants to leave at three months or six months or twelve months, they are allowed to do so because heads of the schools apparently have no choice as they have to depend on the students as their source of income.

8802. What is the length of the course that you recommend?—At Studley the horticultural course was two years at least, and I always tried to get students to stay for three, and gave them more responsible work in the college during their third year.

8799a

8803. I think you have a short course?—We had short courses, we were obliged to do that, of three weeks and six weeks.

8804. You end up this paragraph by saying: "Reason for this conclusion. Instances given to prove it." Perhaps you will give us some instances where the teachers have not taken to agricultural training seriously?—I can give you the names of some, but that, I understand, is not what you want. I mention that as an instance, and it is only one of many, where small holders take pupils and have not a properly worked-out curriculum for them to keep to.

8805. I know very well the class of students that you have generally been brought into communication with at Studley Castle. Do you seriously think those ladies will ever become small holders?—I think a certain percentage of them undoubtedly will.

8806. Let us know exactly what quantity of land you think they are likely to apply for?—I think it would be usually for market gardening. A larger proportion have taken up market gardening, although, of course, there would be some who would want a greater amount of land for dairy farming and a few for poultry.

8807. The principal occupation of these ladies would be dairying and poultry keeping. Would they have any glass-houses?—Those who took up gardening would.

8808. What would they grow under glass?—Crops for market, like tomatoes and chrysanthemums, and of course, raising bedding stuff.

8809. Would it be possible to do that in all centres, where the railway accommodation was very bad for instance?—Of course, that is one of the difficulties that one has to contend with, and that is why it is so important to get a place on a good railway line.

8810. Unfortunately railways do not run into all these wild regions, and it is no good to take on market gardens in isolated places?—Within two or three or four miles of a railway station is not an impossible distance at all, and I think there is a good deal of land to be got in different parts of England at that distance from a main line.

8811. Have you ever calculated the cost of the carriage of these goods from the time of leaving the land to the time they get to the market or on to the table?—Yes, I have very often, and I have experienced the difficulties of carriage and marketing generally. That is why I so strongly advocate that any number of small holders should group themselves into a settlement, so that, instead of them each having their own cart or motor, they should send their produce to a depot in the centre of the settlement, and it should all be taken in one conveyance to market; of course by bulking produce one would naturally be able to get better prices. For this reason I have laid such stress on the necessity for co-operation right the way through.

8812. There must be a better feeling amongst ladies than there is amongst men, because my experience is men will not join themselves together to work their business in that way?—I think if you could prove to them that they will get 16s. instead of 12s. out of every pound for their produce by combination they will combine.

8813. That would be a rather large percentage, would it not?—I merely use those figures as an illustration.

8814. It is not an unusual thing for many of us to send out produce into the London markets and scarcely get enough for it to pay the empty packages to be returned?—I know that perfectly well, and particularly when I made the huge profit of three farthings a pot on cabbages myself.

8815. Our Chairman made a remark to you just now about the difficulty of carrying on such work. What do you say to that?—I do not think it would be difficult if it were organised on co-operative lines.

8816. To go back to that point, do you not think it would take an immense time to do it?—No, I do not; because if a group of people would settle down, say, in six houses, in a month's time they would be straight, and in order, and by the time their produce was ready, the arrangements would be made by the marketing depot for marketing the produce.

8817. To go back to another remark of Lord Barnard's in which he asked you in regard to the reference, you know as well as possible that if this Committee is to recommend that extra money be spent on agricultural education we shall have to show it would be used at a profit to the individual?—Yes.

8818. That is why I wish to know whether you can show it would be possible for the individual to get a profit out

of market gardening in this country?—I am quite convinced of it after my ten years' experience and living amongst it. I have studied this question from every point of view, and I am more convinced of it now than when I initiated the scheme ten years ago.

8819. (*By Dr. Somerville.*) Do you know of any cases where such settlements have already been set up?—No, and I do not think there are any.

8820. You must have come into contact with a very large number of lady gardeners during the past ten years?—Yes.

8821. Women, I suppose, would be thankful to get a definite object to work for?—Yes.

8822. Do you find it impossible to organise and secure this in your settlement?—I have not tried hitherto, because, of course, whilst I was Warden of the College, my time was more than fully occupied. But that is, of course, what I am trying to do now.

8823. Have you got the nucleus of an establishment?—Yes.

8824. You have not given an answer to any question with regard to the profession of lady gardeners in private establishments. A great many of your pupils, I suppose, have taken up private gardening?—Yes, a great many. I had letters from two or three the other day saying they were well satisfied with the work, and that they would rather keep to that than take up small holdings. One of my very first pupils wrote to me the other day; she has been in her place for about three years, I think, and she has worked under considerable difficulties, but she is still there and is quite satisfied, and I presume her employers are satisfied also.

8825. She probably has got some assistants to do the heavier work?—As a rule they have not many. They may have a boy or a rough man, but they do not, of course, go into large establishments.

8826. Do they, as a rule, reside in the house of the employer, or have they got separate lodgings?—I think on the whole more live out than live in.

8827. You think that suits them better than fitting them into the establishment?—I think it is easier, and except under exceptional circumstances it is wiser for both sides.

8828. Is there a considerable demand for lady gardeners?—Before I left Studley there was a much greater demand than we could supply, and I believe that is still going on. You probably know better than I do that in the last census there were 5,000 women gardeners in the United Kingdom and 99,000 women farmers. It was a perfectly astounding figure.

8829. (*By Lord Barnard.*) I have the census report here, and I should like to say to you that from my own personal experience in the case of women farmers, they do not generally farm their own farms. They are generally widows of the former tenant, and the farm is almost always carried on by the son. I do not think these figures would lead me to think that 99,000 women had deliberately taken farms?—Perhaps not.

8830. (*By Dr. Somerville.*) Do you think there is a tendency on the part of those lady gardeners to demand more leisure and to demand longer holidays than a male gardener would do?—I think that was more the case when they began, but I am glad to say that is being eliminated from their ideas now, because, of course, entering into competition with men, it is impossible.

8831. They adapt themselves to the customs?—Yes, and of course any work of this kind is very arduous work, and it has to be stuck to, which is one of the things they must do. Those who have succeeded are the ones who have stuck the hardest.

8832. Would 20s. or 25s. a week be considered a fair average remuneration for a lady gardener in a good position?—Yes, 25s. to begin with, and then a rise.

8833. You say they generally live in lodgings rather than assort with a companion and run a small house of their own?—Yes. Sometimes, of course, there may be two, and then they take a cottage, and that is very much nicer.

8834. (*By Mr. Medd.*) Could you, roughly speaking, tell us the kinds of occupation open to women who wish to earn their living after they leave Studley? We have had the gardener on her own account and we have had the gardener who goes to a private establishment, and are there any others?—There is the poultry manager, or the

Miss Edith
Bradley.

18 June, 1907

Miss Edith Bradley. woman who does poultry on her own account ; and there is the dairy woman or cheese-maker.

18 June, 1907 8835. Any others ?—There is dairying and, of course, gardening. Gardening embraces fruit growing as well as market gardening, and then there is the preservation of fruit in various forms, bottled fruit and jam making.

8836. Have any of your ladies gone to large establishments merely to do table decorations in flowers, and so on ? —One or two of them did in the first instance, but I do not think they are doing it now. I do not know of any who are.

8837. The difficulty in regard to an occupation of an outdoor character either when employed by someone else or when working on one's own account, is, in the case of women, that it becomes impossible on the first appearance of age. That is the difficulty which one has to encounter. A sufficient time has not elapsed yet for that to have happened, but one would cease to employ a lady to work out of doors as soon as she became gray. All I want to show is that there are other occupations open to women ? —Yes.

8838. Then of course a number of ladies go to Studley to qualify themselves for life generally ?—Yes.

8839. For reasons of health, and of course also they get a healthier view of life than they would get from mere book learning, and so forth ?—Yes, certainly.

8840. And they admit they are very much the better for it ?—Yes.

8841. Do you cater solely for women who wish to earn their living ?—No, and that is a point, of course, in favour of my argument that it is not taken seriously enough as a profession.

8842. But many men who have not to earn their living go to Oxford and still they take it seriously ?—Yes.

8843. What do you mean by this expression here in your proof that this agricultural training has no admitted status in the educational world ?—I mean that it has no place in the curriculum of an elementary or a secondary school, as far as my knowledge serves me.

8844. But all those places marked on that map are agricultural institutions recognised and subsidised by the Government ?—Yes, they are agricultural colleges.

8845. And you say agricultural education here ?—Yes, but of course I am alluding to the girls specially, and in the elementary and secondary school there is no place in the curriculum for such subjects as theoretical gardening and biology dealing with poultry, pigs and cows, &c., or the chemistry of soils and manures.

8846. I was not referring to that for the moment, but you say in the second paragraph : “ I do not consider that agricultural training is taken seriously enough because it has received no admitted status in the educational world.” That is what I do not quite understand. All these institutions are, as I say, agricultural institutions and Studley Castle has, only the other day, had a new scheme by the Board of Education for its future working as a public institution ?—I am only too happy to hear it.

8847. Then again, take the case of Reading. They have been educating women gardeners now for some time, for a couple of years, at any rate, and receiving, unfortunately from my point of view, grants from the Board of Education and the Board of Agriculture for it. But, however, in regard to this question of agriculture, would not you like to modify your expression a little ?—Certainly, if you think it is not a happy way of putting it. If I have made my point clear, that is all I want.

8848. I do not think anyone desires to see agricultural teaching in any elementary or secondary school. It cannot be given there. It would be out of place. If you want to give agricultural training you must go to a school for that purpose. Then would you not give in the secondary and elementary schools the widest possible nature study ? —Yes.

8849. Probably that is what you mean—familiarising the children from their earliest years up till the time they leave the high school, if they are girls, with every aspect of nature, teaching them to handle it ; teaching them to experiment with it, to observe it and so forth. Is not that what you mean ?—Yes.

8850. Then again, what I should like you to use your influence in is to make it universal. Are you familiar with the High Wycombe School ?—Not of late years.

8851. They do a great deal there. But are you familiar with the Ladies' College at Cheltenham ?—Yes.

8852. Have not you seen their work there ?—Perhaps I should not say I am familiar with it. I have not seen their work on the nature study side.

8853. Our County Agricultural Show opens to-morrow at Stroud, and it is not unlikely that the best exhibit from any educational institution will go from the Ladies' College, which shows it can be done very well, you will agree ?—Yes.

8854. The main point I wish you to inform the Committee on definitely is that, leaving outside the question of women earning their living by market gardening, an institution like Studley turns out many women who are qualified in every respect to earn their living and also that Studley acts as an institution for qualifying women generally for life ?—Yes, certainly.

Mr. ALFRED HOPKINSON, LL.D., K.C., called and examined.

Dr. A. Hopkinson. 8855. (By Lord Barnard.) You are Vice-Chancellor of the Manchester University, I think ?—Yes.

8856. You have been kind enough to express your willingness to give this Committee some evidence on the subject which they are now considering, and I dare say you are aware of the terms of reference ?—I have read the terms of reference.

8857. Perhaps the best plan would be to ask you to be kind enough to state, in your own words, what your views are on the subject of the reference ?—I might perhaps say first what we are actually doing in subjects bearing in any way on agriculture in the University of Manchester, and then perhaps come to the future possible developments.

8858. Yes.—With regard to what we are doing now, we have no general degree course in agriculture or definite instruction in it at all at present ; but I think, on the other hand, we are exceptionally strong in the subjects bearing directly or indirectly on agriculture. In chemistry, for example, which bears on it, we have a particularly strong department. There are two professors and eight or nine demonstrators, and we have very large chemical laboratories. We have a very strong department in zoology and in botany, and, in addition to that, in engineering and surveying, so far as these subjects come in, we have provision for instruction. Then we have also very complete laboratories for bacteriology and a professor of that subject. We differ in that respect from most of

the other university colleges and universities, in the fact that we have separate professorships of general pathology and of bacteriology, and we have special laboratories for each. We have a special diploma in the department of veterinary state medicine. We do not admit for that diploma any except those who have already got the veterinary qualification. After obtaining that qualification, the candidates take a special course of study for the diploma in veterinary state medicine. The investigations in the public health department under the professor of bacteriology deal with the diseases of animals, and matters which may directly or indirectly affect agriculture, as well as with the subject of public health and diseases affecting human beings. Then, with regard to botany and zoology, we have made recently a special development. This year we have appointed, for the first time, a lecturer in economic zoology and one in economic botany. Perhaps I may hand in the memoranda on their appointments. I will not trouble to read in detail the terms of the appointment. It shows, however, the lines of future development of the work which we might fairly undertake. In substance it amounts to this, that both in zoology and in botany, there is a threefold work to be undertaken by these lecturers in conjunction with the professors who are the heads of those two departments. The first is reporting, that is, dealing with subjects which may be sent by local authorities or private individuals. For example, animal pests, not necessarily confined to agriculture, but also affecting various mercantile products, as well, will be

Dr. A.
Hopkinson.
18 June, 1907

investigated. The water supply and the injurious creatures which may exist in reservoirs belonging to local authorities can be investigated. We can do the same with regard to botany. We should expect to send reports from time to time on specimens which may be sent to us, and, there again, that can be done both as regards agricultural and commercial undertakings. Then the second head of work which is assigned to these lecturers, under the direction of the professors, is definite original research for the purpose of advancing knowledge. Of course, these two branches no doubt overlap to some extent. One deals with the specific reporting for the local body or individual as to a particular product, and the other is with the general view of advancing science. Then instruction and courses of lectures are provided for students of economic zoology and botany. I might hand in the terms of appointment of those lecturers, perhaps. (*Handing in same.*) I may say at once these are quite new things.

8858b The financial question comes in here. With regard to economic botany, for instance, we have to assign a very small stipend indeed. We have had to appoint quite a young man, very competent and able so far as we can judge, but if we wish to keep a man of that sort for any length of time we must increase the stipend, but the resources of the University are insufficient for that and for the necessary equipment. We have also in Manchester a very large natural history museum, and the duty of the lecturers in conjunction with the professors of the two departments will be to see to the arrangement and proper labelling and the receipt of specimens, that will be useful in connection with economic botany or zoology.

8859. Does this museum belong to the University?—Yes. There is a special committee of management, on which there are representatives of the City Corporation as well as of the University. The museum is the property of the University, and the committee acts under the general control of the University Council. It is open to the public under the terms of the arrangements under which the museum is founded, and that museum is now very full and is capable of very considerable development. Especially is it important that we should have a new wing at the museum devoted to botany and also more laboratory accommodation, leaving the present accommodation mainly for zoology and geology. The museum is found very valuable in connection with school work, and that is, perhaps, rather outside the purview of this committee.

8860. No, I think not.—As regards school work, I think it is important to notice that the boys and girls from the schools round are more and more using the museum as a place to go to, under the direction of the teachers and the museum staff, to see specimens bearing on their work in school, whether primary or secondary.

8861. For both you say?—Yes, but mainly, I think, at present, secondary. The young people come to have their specimens marked and identified, and the teachers in the school find it a great advantage to have some place near hand where they can bring the scholars.

8862. Do you have any special collection in the museum of farm animals?—No, not at present. I do not think we have any such special distinct collection, but I hope that with these new developments and new lectures we may, at all events in botany, have an arrangement of specimens that would be very useful from an economic point of view. That is roughly the sort of thing we have at present.

8863a Have you anything to say as to whether your services are likely to be much required for making these reports?—It is very difficult to form an estimate at present. Of course it will depend on the repute of the men and how the thing is worked and how far it gets popularly known. But I may give one example of the kind of thing we do: there was the case of a reservoir which was found to be polluted. It was a case for zoological investigation, and the professor reported on it, and found means of putting an end to the pests infecting that reservoir.

8864. On what terms is that sort of work done? Is it paid for, or what do you do as to a fee being charged?—We have not, as a rule, charged a fee in botany and zoology yet, but we have a scale of fees in another department. We have a public health department, where we have laboratories to which the local authorities and hospitals and medical men send in specimens for bacteriological investigation. There we have a scale of payments. Three thousand or 4,000 reports are sent out every year from that department, and as to stipends of the special staff engaged, it is self-supporting.

8865. Can you say as to whether that department undertakes anything in the way of the bacteriological

examination of milk?—Yes, from time to time it does so. As to those investigations, that is just one case in which we find the University Department is far the most efficient. They are difficult investigations to deal with, and they occur at irregular intervals, and I do not think that any local authority can do them in the same full way that the University can. Instead of having to investigate for one local authority we may have 50 or 60 authorities sending in subjects for investigation, and there is a constant supply of work for the staff. I could furnish, if desired, a full report of the work of the Public Health Department, which in part, but in part only, bears on agriculture.

8866. Would that department deal with the question of tuberculosis in animals?—Yes, they have had some investigations on that subject. I may mention one investigation undertaken recently as to the effect of feeding of different kinds, and of certain medical preparations, on tuberculosis in swine.

8867. What is the nature of the jurisdiction or area in which the University operates? Does it cover the whole county of Lancashire?—There are, perhaps, two senses in which the question may be taken. There is first the area from which students come to the University in large numbers—we may say almost daily—by train, and what we call our sphere of influence. That takes in the district from the extreme north of Lancashire to the county of Stafford. I think one might take it from Lancaster and Blackburn to Leek and Stoke and Crewe. Then the University of Liverpool overlaps in such places as Warrington and Preston. It is difficult to say which they belong to. But we have had students coming from Halifax lately and the north-west of Derbyshire. That is about the district where one has to go and distribute prizes from time to time to schools which regularly send pupils to our University, and we may take it, the district includes east, north-east and north Lancashire, east Cheshire, north-west Derbyshire, and north Staffordshire. We appoint representatives of schools over that district. Then, in addition to that, we have students who come especially for the higher work, not only from all over the country, but all over the world—from Japan, Russia, Switzerland, for example.

8868. But leaving out Liverpool, about which we know nothing officially at the present moment, we might say that at any rate Manchester provides a centre where the highest scientific knowledge can either be obtained or sought for the whole of that district?—Yes. Of course Liverpool has grown very rapidly, and we may have on certain subjects to make an arrangement under which they will take a lead in some matters and we in others. Liverpool people will take up tropical medicine, and we may not have any call on any substantial scale to do that.

8869. But at any rate you do aim at providing the highest scientific knowledge that can be obtained at present by the district?—Yes, and also we may say that we have students and men coming to do research work from all over the world.

8870. And you are prepared to distribute such information as may be obtained for the benefit of society at large?—Yes, we wish not merely to be a teaching institution for the city, but we wish to take an active part in the assistance of education of all forms and over a wide area.

8871. Now perhaps you will be good enough to tell us what developments you have in your mind for the future?—The first thing we must recognise is that we must not take up developments which would interfere with or prejudice the agricultural education which is given under the County of Lancashire scheme at Hutton, near Preston, and under the Cheshire County Council at Holmes Chapel. Those are the two places for specific agricultural education which are nearest to us.

8872. Surely you would not interfere with them?—We might give mutual assistance if we worked on right lines and work in satisfactory relationship with them from the beginning. For example, I do not think we should ever go to the expense of providing farms. They have good farms at Holmes Chapel and Hutton, and by means of supplementing the education there given we might do very useful work. We cannot educate the ordinary farmer as a rule at the University. That could be done better and adequately both at Holmes Chapel and Hutton. I think we might provide in the University a department for original scientific researches and might work very efficiently in association with some of the local authorities in making experiments of a useful kind. We have recently acquired, quite near Manchester, a considerable property which would be useful for experiments carried on in

Dr. A.
Hopkinson.
18 June, 1907

zoology and botany. That property is less than two miles from the University. Then I think we might do a good deal by working in co-operation with Holmes Chapel, for example, in two ways. One is where there are really good students there who ought to go on to become either teachers or estate agents on a large scale, or who might go abroad. We might affiliate the work of that institution there to this extent, that a student might count the period of his study there as against one year of the three required for a degree in our University. We might take one of the three years required in that way, and then he would come to the University for two years' instruction in sciences bearing on agriculture. Then, what is still more hopeful, I think, is this: that we might have young men who have been at the ordinary secondary schools coming and matriculating and taking a course of study with us for the degree of Bachelor of Science, and who desire to take up agricultural work. In the case of such students we should recognise agricultural work done at such an institution as Holmes Chapel. We have plenty of analogous cases, for example, in the degree of Bachelor of Science, in which pharmacy may be taken up as a special subject. So we might have agriculture taken up as a special subject. We have a degree now in mining. There the men work during part of their course in the actual coal mines in the district, or, if it is metal mining, they go to the Isle of Man in vacation time. Some arrangement could be made with such an institution as Holmes Chapel or Hutton: students would go there for practical work, and we should have a complete course of study between what was provided outside and what is done at the University. That is a possible development. Then we could give our degree or certificate, as the case might be, giving University recognition to such work. These graduates might become teachers or take up agricultural work on a large scale, or they might become agricultural experts, or they might go abroad. Those are the lines of development.

8873. What are the courses of study? You have already mentioned the degree and certificate. The degree is a three years' course, I suppose?—Yes.

8874. What is the certificate course?—The certificate varies on different subjects. Take the mining certificate, which is a recent one, the mining certificate and degree are both recognised by the Home Office for mining certificates. The mining certificate involves a two years' course. Then again, in engineering, the certificate involves a three years' course, but the certificate can be taken without passing matriculation. Men in works may take up the course after they have dropped ordinary school subjects for many years. We give a certificate there, but those cases are becoming less numerous, as it becomes more and more the habit of schools now regularly to prepare for our matriculation.

8875. Have you any other short courses in mind?—Two years is the minimum for any certificate except those cases where, for those who have already graduated, we give a special diploma. The Public Health Diploma may be taken in one year. The Teacher's Diploma can in one year after graduation. But I think we have no certificate which is not post graduate which does not involve two years at least.

8876. Then you suggest that you could provide facilities for instruction, say for teachers in the higher agricultural branches, and such as I know from my personal experience they largely go to Scotland for. You hope to be able to supply that at Manchester?—Quite so.

8877. Also in other allied scientific pursuits, such as those of analysts and chemists and those special businesses?—Yes.

8878. I do not know myself, personally, what the qualifications of an analyst are. I do not know whether you know what is special?—I am not sure whether local authorities have special rules, but, as regards ordinary chemical analysis, one who has been through the honours course in chemistry is admirably prepared to take it up, with a little experience. But as to bacteriological work, those who are to act for local authorities would require special training in public health laboratories. We can do that very well. We should want to superimpose on the scientific work we now do some definite agricultural work, which we at present do not provide. I think we should want more resources to do what I have indicated.

8879. Is the University supported by public or private money, or both?—It was started with private endowment entirely and, for many years, worked entirely

with that. Now we have from the Treasury a very substantial Government Grant, which was increased two years ago, and subsequently was increased under an arrangement then made. Then we have support from various local authorities, from Manchester and the County of Lancaster and of Cheshire and the boroughs of Bury, Oldham, Stockport, and one or two other boroughs. The latter contributions are small in amount, but still we value the association very much indeed, because it shows there is an interest taken in the University by all the authorities. They are also represented on the governing body.

8880. I am not familiar with Lancashire, but am I right in saying that many of those towns which you have just mentioned have higher schools and places which are collegiate centres where chemistry and other scientific subjects are taught?—They all have their technical schools, but they have a different scope from the University work.

8881. Do their students go on from those technical schools to complete their education with you?—In some cases, yes, but, of course, a great deal of their work, the most part of it, in fact, is evening work. What we naturally draw more from is the grammar schools, including the municipal schools which are developing all over the county and especially in the great towns of the county.

8882. (By Dr. Somerville.) You only allow specialisation in the third year, I understand. Does that apply, for example, to a man studying engineering?—No. I must have mis-expressed myself if I put it in that way. I only meant with regard to those coming and taking up agriculture as a special subject; such students might take up the special subject in the second or third year. In our honours school they specialise from the very first, and become more specialised as they go on. In chemistry, if a man takes up honours, he works at chemistry as his special subject from the beginning, though in the first year he would take physics or other science.

8883. He will take physics and mathematics possibly, and would he be allowed in his second year to confine himself entirely to chemistry?—I think not, entirely.

8884. But in his third year would he?—In the third entirely, and in the second year probably physics. It is, roughly speaking, becoming more specialised as the course advances. But no man would take his degree entirely in a simple subject. Although taking engineering honours he attends mathematics throughout his course. If he takes up physics he would also take mathematics, and might take electro-technics.

8885. Perhaps I did not express myself quite well, but, I think, I am probably correct in thinking that, for example, if a man is going to take his degree in the honours school of botany, it would be only during his third year that he would be allowed to confine himself to that?—He would take zoology at some period too.

8886. But during his third year?—In his third year he might confine himself to Botany. I could give the exact details of the course, but, roughly speaking, that is what it amounts to.

8887. Then I gather rather that your so-called diploma is a superior certificate?—They are different in kind. The certificate is, as it were, alternative to the degree. The diploma is something taken in some special line after a degree.

8888. And is only given to graduates?—I think in all cases it is given to graduates only, but I will not say absolutely so. Take the diploma in Public Health, a man might take that if he had his qualifications from the Conjoint Medical Board instead of the University, but he would have to become a qualified practitioner, and so with Veterinary State Medicine—he has to become a veterinary surgeon.

8889. So that the course for the diploma is a four years, course, really?—Yes.

8890. Do a considerable number stay on so long?—Yes. The Veterinary State Medicine is a new thing, but there are some students in it each year. In the Teachers' diploma, we have a considerable number.

8891. These two diplomas, the Public Health and the Teachers', have got a definite commercial value which is easily appreciated?—Yes.

8892. But do you give one in engineering?—No, not a post graduate diploma, but a certificate such as I have described.

8893. For geology?—No.

8894. Or economics?—No.

*Dr. A.
Hopkinson.*

18 June, 1907

8895. Only in Public Health and Veterinary State Medicine and in Teaching?—I think those are the only diplomas at present of that kind. Of course, we have a great deal of post graduate work in other lines, but not for a specific diploma.

8896. Have you formed an opinion as to the public assistance in the direction of a grant to the University which would be necessary to satisfactorily equip the University to give instruction of the kind requisite for a degree in agriculture?—Even working with Holmes Chapel, we should want a very substantial amount. Take the case of the two departments you named before. A young man is appointed lecturer in botany at £125 a year. It is absolutely impossible to keep a man for any length of time at that, and we should want a substantial addition to the funds for the purpose. Then our museum is overcrowded already, and if there are any developments in the economic line, we should want a new building, and that means more rates and lighting and heating, as well as capital outlay. Every development of the buildings means a very substantial increase in upkeep.

8897. The work of a lecturer in zoology would also involve a course in agriculture?—Yes. We have a larger stipend there, but in both cases the stipends are inadequate.

8898. The aggregation of these two stipends is only £325 a year?—Yes. We get clever young men who will work up in it and they ought to have very much more in a very short time, as soon as they have proved their metal.

8899. In your department of surveying, you supply all the instruction required, I suppose?—Yes, but even there, if we get a substantial addition to the number of students, it means an additional demonstrator. At present our engineering accommodation is quite deficient, and we are bound to build another building. The drawing room will not accommodate the students who want to be actually at work there. So that we are constantly hampered there. We have got a room which is quite inadequate for the students, and the same in regard to the chemical laboratory, so that we cannot afford the requisite development.

8900. So far as the personnel is concerned, with an assured grant of something like £1,000 or £1,200 a year, you would probably see your way to proceed?—Yes. There are certain lines of action which the public demand would support, and we could help the development with the resources of the University.

8901. (*By Mr. Medd.*) Have you conferred at all with the Liverpool University on the subject yet?—No, not on this subject.

8902. Because, of course, Liverpool would cover very much the same ground that you would cover unless you came to some local arrangement?—Partially so. There are portions in which we overlap.

8903. As to agricultural education, Liverpool is excluded from Flint by Bangor, so that you and Liverpool would, at first sight, have to share Lancashire and Cheshire?—And North Staffordshire, and, I should think, one might go as far as Shrewsbury on the other side and the middle of Derbyshire on the other.

8904. How would you divide your areas between yourself and Liverpool?—The same question arises on other subjects at present. At present students come to which they like.

8905. But they come for miscellaneous subjects. Here in agricultural education the amount of money available is very small, and it is very desirable to concentrate the various areas and to affiliate them to particular centres in approaching the Board of Agriculture?—Yes.

8906. Now I understood you to say to Lord Barnard that, of course, the School of Tropical Medicine is centred at Liverpool?—Yes.

8907. Would it not be possible for you to agree, before taking any further steps, with Liverpool, that the scope of agricultural research or education should be centred at Manchester?—I do not know what the Liverpool people would say to that. Of course, our departments are the older ones, but one recognises the fact that in several respects Liverpool is extremely good and has done good work.

8908. But in the future I can see very serious difficulties in having to provide out of public funds for two universities so close together as Manchester and Liverpool. For instance, we might say that Holmes Chapel would fall more obviously within the sphere of Liverpool than within the sphere of Manchester?—I think Holmes Chapel is rather nearer to Manchester by train than it is to Liverpool.

8909. Then you would cut Liverpool off with very little,

would you not?—Yes, I think it would be smaller, but, certainly, Holmes Chapel is nearer Manchester. It is on the main line.

8910. It is a few miles nearer, but take Warrington. That goes to Liverpool, obviously?—It is a little nearer Manchester. It is a question of Bradshaw's Time Table, but I think it is a shade nearer to Manchester. However, we have the same question as to teachers there. Warrington is, we may say, neutral ground.

8911. But in each of those departments there is a very much larger number of students to cater for. You would have very many more students to train as teachers than you would in agriculture?—Yes, I think so.

8912. If you are to establish in the future agricultural centres at both Liverpool and Manchester, the number of students at the two would be comparatively very small?—I think one must look at it partly from this point of view, that I do not think either university ought to go to the expense of establishing a farm. I do not think that would be legitimate in either case. They both have large botanical departments already.

8913. What I am anxious about is to obtain an opinion from you favourable to the idea of conferring with Liverpool and utilising your university in preference to theirs as a centre?—I cannot say what Liverpool would say to that. Two large towns like Liverpool and Manchester often feel that they do not like to co-operate.

8914. I feel on the whole that your scheme is extremely likely to fall to the ground if you attempt to establish it without Liverpool?—Liverpool has one branch, that is Tropical Medicine, and we should not think of interfering with Tropical Medicine. We should not think of interfering with the Tropical Medicine or the fishery branch.

8915. It is quite natural that Liverpool might hand over its training in agriculture to you at Manchester?—I feel a little difficulty about speaking for Liverpool, but we have not the slightest intention of putting up a school of tropical medicine on a large scale at Manchester. There are certain things in which we have a kind of competition. I do not say there need be in agriculture at all. But there is the Public Health Department; both universities undertake this work; ours is the older, and we report for a large number of authorities all over the North of England, but Liverpool also has a department of the kind, and I do not think that there has been any harm done by both working on those lines.

8916. My questions were merely as to the desirability of forestalling any opposition on the part of Liverpool, or overcoming it, so that the possible danger which would arise from having two universities in competition might be avoided on this point. That is all.—If Liverpool liked it, it would do, of course, but, on the other hand, we could not shut our eyes to the fact that Liverpool has done a good deal bearing on agriculture. I do not think it would be in any degree fatal to the scheme, if both had agricultural departments, but I think it would be better to have an arrangement under which Manchester should do so.

8917. There might be a joint scheme, but by working in conflict you would find it extremely difficult to get adequate Government aid and also to get an adequate number of students for research purposes. It would be said that they are so close together that one can cater for the district, and we cannot support two?—I fancy the population is so large that there would be scope, provided you did not attempt to get a complete agricultural department under the University only. The Yorkshire College has that, but it would seem impossible for two universities so near as Manchester and Liverpool to expect public support on that basis. But I do not think it would be fatal to have such a thing as a course at Holmes Chapel before coming to a scientific department in Manchester or Liverpool, which ever happened to have more distinguished men in the various departments and to be preferred by the student.

8918. I was hoping your intention was to establish a definite agricultural department—with or without a farm is another matter—but to have a centre for the highest agricultural research to which the selected pupils from Harris' Institute and Holmes Chapel might come, and that I take it is your idea?—That is the best arrangement.

8919. Then I want to see how it would work if you became in that way what I may term the collegiate or university centre for a group of counties, the counties being Lancashire, Cheshire, Shropshire and Derbyshire. As to Birmingham, it is a question of railway approach

Dr. A.
Hopkinson.
18 June, 1907

to some extent, but in that way you could undertake the supervision of the agricultural education of the whole of that area?—Yes.

8920. Leaving of course the management of each separate institution as it exists at present?—Yes.

8921. Then you would not object, I suppose, to a Joint Committee with representatives from those institutions and from the respective local bodies?—Speaking off hand, that seems to be the best in outline. I should prefer that, if it could be worked.

8922. To obtain your opinion on that point was the only reason for my asking you in regard to the possibility of action on the part of Liverpool, which would necessarily render it more difficult?—Yes, it would render it more difficult. The scheme suggested is, in my opinion, speaking off hand, the best one. But of course the Liverpool people work on the most friendly terms with us, although we are working in a sense in competition.

8923. I dare say in many matters of this kind there is a principle of give and take, and in this matter of Tropical Medicine you do not undertake it at all at Manchester, do you?—No. We offer a short course that medical men can go to, but it is on quite a different scale.

8924. You have left Tropical Medicine as well as the fishery branch entirely to Liverpool?—Yes, substantially.

8925. Do you now insist on residence for all students?—Yes, for all degree students: that is, residence in this sense, that they must attend a regular course of study. We do not act merely as an examining body or grant degrees without insisting on regular study in the University.

8926. What is the minimum period?—The normal period is three years and the only exceptions are in favour of those who have been through an adequate course of study at some other recognised institution. Supposing a man came with a degree from a colonial university, we should let him enter and recognise his course of study there as covering part of the three years.

8927. But coming from such an institution as Harper-Adams or Holmes Chapel or Harris Institute, what do you say?—We should require probably two years. Harris Institute we have already an affiliation scheme with, and under that their students would take one year less—they would take two years, that is. We are now considering whether that is to be continued or not. Harris Institute has altered its character a good deal and we are having an enquiry now to know whether that affiliation scheme should be continued.

8928. There is no likelihood of reducing the period of residence below two years, is there?—I do not know. That is a matter our Faculties would have to consider carefully. It might depend on the institution, but I think probably not. In medicine, we are not allowed by our charter to give the degree under two years, though we should take three years at Cambridge or at London University as part of the

five years required for qualification. Yet two years in the University is the minimum in medicine.

8929. Then what are you doing now in the training of elementary school teachers. I do not mean at the ordinary school, but in rural subjects?—I think we cannot say that we are actually training specially in rural subjects. Our position with regard to the elementary schools is that we have 100 men and 100 women training in our Department as elementary teachers. We do not admit any that have not passed the University Matriculation first, and then they take a three years' course and a degree as well as practical teaching in schools. Then they get their teaching certificate, and they also have the degree.

8930. But you have paid, I think, special attention to nature study?—Yes, we have special classes of study both in zoology and in botany for these teachers, and I have here a prospectus which shows the course of study.

8931. They are very popular and very useful, are they not?—Yes, they are very useful and very much liked. Then we have had a course by one of our staff taking students up the Lake district for field work.

8932. Do you find the nature study subjects are equally beneficial to the urban as well as the rural teacher?—I should think that the majority of our students are urban teachers, and I feel sure the courses are advantageous to them.

8933. The great attention that you pay to these particular subjects has been rewarded by turning out a more intelligent or more observant type of teacher?—I think so—I hope so—and as time goes on I hope we shall find it much more so.

8934. (*By Lord Barnard.*) I do not think I asked you what the administration of the University consists in. Is it a Council?—The Executive body is a Committee of the Court, which is called the Council, constituted under our charter. That is a body of about 22, of whom the Chancellor and Vice-Chancellor are *ex-officio* members. There are four professors elected by the Senate, and then the others are for the most part men of business or professional men in the town. The Senate of Professors deals with the general academic work.

8935. How are the members of the Council appointed?—They are elected by the Court. The Council is a small body and the Court is a large one. The Court appoints the members of the Council.

8936. The Corporation of the City of Manchester and these other boroughs in the County have no official post in the management of the University, have they?—Yes, they are all represented on the Court, which is a body of about 70 members. That body is constituted partly of Nominees of the Crown, or the Lord President, partly of the Nominees of the Chancellor, partly co-opted members, five from the City of Manchester, three from the County, one each from such towns as Bolton, Bury, Salford, Oldham and Stockport, and from other public bodies such as the Chamber of Commerce and the Royal Infirmary.

Professor F. E. WEISS, D.Sc., called and examined.

Professor
Weiss.

8937. (*By Lord Barnard.*) You are Professor of Botany in the Manchester University?—Yes.

8938. How long have you been that?—Since 1892.

8939. You have heard the evidence given by the Vice-Chancellor?—Yes.

8940. Would you like to give any information to the Committee which he has not already given, or express an opinion on anything connected with our enquiry?—I should like to supplement one or two things that the Vice-Chancellor has been laying before you. You asked him with regard to the possible scope of enquiries from local authorities on agricultural subjects. Up to now we have had a considerable number from different localities and private individuals. That is one of the reasons for appointing the economic botanist to take up these more in detail and to devote more attention than is at present given to them. Up to now they have fallen to myself and the assistant in the museum, and last year we answered something like 100 enquiries, which were sometimes very trivial, merely the identification of plants which travellers had brought, or sometimes were of economic nature, it might be the determination of timbers or certain tropical fruits, or sometimes of an agricultural nature,

such as the determination of plant diseases or the determination of various weeds which had been sent for identification. That was about the high tide of our enquiries in the year, but, so far, since the beginning of this year we have had quite a number of them. I think it is becoming recognised that we can do this kind of work, and we get more than was formerly the case.

8941. Is this work peculiar to your University?—In Liverpool they have established an Institute of Tropical Research which deals with timbers and products that come there into the docks very largely, and economic products, and so far it is overlapping with our work, but we have now rather a larger number of ships coming in to Manchester and bringing timber which has to be dealt with on the spot more or less. We are prepared in the museum now to deal with them. We have good collections both of microscopic specimens and of large sections of timber and the necessary books for the determination of these products. I think that even if Liverpool does it we shall have to provide the information for our Manchester importers. Then another point was one that Mr. Medd raised with regard to the classes of teachers who have taken up nature study at the University. I have conducted such classes on Saturday

Professor
Weiss.

18 June, 1907

mornings for their convenience. These are acting teachers, not teachers in training at the University. We have large classes. I remember the first class was about forty, then it went up to 70, and then up to 130 on the Saturday mornings, and some of these teachers have been for two, three, or even four years in succession, because in each year I give a new course dealing with other aspects of the subject. As regards the composition of such classes, they are obviously mostly town teachers sent by the Cheshire County Council. The Cheshire County Council has been doing work on a somewhat extensive scale for nature study amongst its teachers. We were recognised as one of the centres for such work. The results are very satisfactory from our point of view. We find the teachers in constant touch with us, often seeking information on those subjects and doing good work in their school. Those that I have seen in and near Manchester are certainly doing very good work in spreading the knowledge that they have gained. Then one other subject was in regard to arrangements in the museum. You were asking whether we had a special grouping of animals or plants of an agricultural nature. We have that as far as plants are concerned. We have in that way special cases dealing with the diseases of plants produced by animals and parasites and malformations.

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8942. Is that the ordinary farm plants of this country?—Yes. Some are from outside of Britain, and what we want to do now that we have a man who is specially devoted to economic botany is to increase the display of such objects. The teachers make great use of our museum as well as the pupils, and on Saturday afternoons we have regularly either a lecture or some demonstration in the museum to the general public, which includes very large numbers of teachers. But we require more room. I have two rooms at my disposal for botany, but they are inadequate to extend now into the domain of agriculture or economic botany.

8943. Do you send out publications which would be useful to agricultural students?—We have not done so far. In the past we have issued special pamphlets on subjects connected with the work, but not on agriculture. But now the general plan is to publish whatever research is being done in some scientific journal and to circulate it amongst the subscribers of the museum, the correspondents, as I will call them, who supply us with material and send us information. We circulate the reprints from the scientific periodicals on our own account.

8944. I want to ascertain how the results of your work are circulated amongst those who are practically interested in it. Does that information reach the hands, say, of teachers in places like Holmes Chapel, do you think?—I have sent them any publications which I thought at all interesting to them.

8945. So that they in turn can hand them on to other students?—Yes.

8946. The object I had in asking the question was to find out whether this information really reached the general public?—I represent the University on the Cheshire Education Committee, and have been put on the Holmes Chapel Agricultural Sub-committee, so that I am in close touch with their work.

8947. Of course a provincial university is merely a local institution, but the fact of its having public Government

money makes it a national institution, and would that information go to other places outside the district?—I do not think we have circulated reports except to people who have applied for information. But our researches have not been largely on economic lines. In both zoology and botany reprints of our researches are circulated all over the world. We get exchanges from every part of the world really. I send them abroad to Canada and towns in South Africa, so that we are in touch with the work being done.

8948. I think I am right in saying that in Canada and the Cape and Natal, and also in the United States and other countries, the departments charged with the control of this kind of work take every step to publish the information obtained by scientific men amongst those who require it?—I believe that is so.

8949. Do you think that such a scheme would be possible in England with the Board of Agriculture—say all your publications being sent to the Board of Agriculture and that they should circulate them amongst those colleges and institutions?—Do you mean the result of the scientific investigations?

8950. Yes, and reports and so on?—I do not think there would be any objection to that so far as I can see.

8951. So that the public money should be made use of by the public all over the country?—That would be a very good plan, I think.

8952. Do you give lectures outside occasionally?—We have the university extension courses. I am to give a course at Warrington on plant life, and I have given two other courses in the neighbourhood of Manchester, and one at Wimslow, in Cheshire. There are occasional lectures which we give. I gave one at Holmes Chapel to the students there on agriculture in the Transvaal. I had an opportunity of seeing something of South African agriculture when out with the British Association.

8953. (By Lord Moreton.) You have botanical enquiries, I understand?—Yes.

8954. Could you tell us roughly at all how many of those would apply to British agriculture?—Not more than a dozen, I should say.

8955. (By Mr. Medd.) I should be glad if you could tell me the cost to the acting teachers who come. Do you know how the fares are paid?—By the Cheshire County Council in the case of their teachers, and the same with the fees of their students.

8956. It costs the teacher nothing?—Nothing.

8957. Then how were they paid elsewhere? Did they pay themselves?—The great majority paid themselves. There is an arrangement by which the Board of Education pays the fees of the recognised science teachers. I do not think it would affect really more than perhaps eight or ten.

8958. Do you ever visit the schools at which these teachers are engaged?—I have visited those in the neighbourhood of Manchester, but not the County schools.

8959. And you find them a better type of teacher?—Yes. I think the teachers of these schools are doing really very good work. I have seen them both at Stockport and at Manchester.

Mr. H. HAMEL SMITH, called and examined.

8960. (By Lord Barnard.) You are aware of the terms of reference to this Committee?—Yes, I think I am.

8961. The object of the Committee is: "To inquire as to the provision which has now been made for affording scientific and technical instruction in agriculture in England and Wales and to report whether in view of the practical results which have already been obtained, the existing facilities for the purpose are satisfactory and sufficient and if not in what manner they may with advantage be modified or extended." You state that you wish to give us your views on the subject?—You mean in the United Kingdom when you speak of this country, do you?

8962. The reference applies to scientific and technical instruction in England and Wales, but the persons who

receive that instruction may go elsewhere afterwards?—Yes.

8963. Therefore I do not want you to be limited to this country in your evidence. It is the instruction given in this country.—Yes.

8964. Will you state to the Committee what your views are on the subject?—As far as this country is concerned, I would go mostly to London where my experience has been. I would say, compared with Liverpool, the Londoner does not appreciate the value of research work. I find he is rather of a selfish disposition, and as long as trade comes his way, he takes it for granted that it is due to him as being located in the biggest city in the world. But the tendency has been for products to leave London and go elsewhere, and I think it is due a good deal to the

Mr. H.
Hamel Smith.

Mr. H.
Hamel Smith.
18 June. 1907

lack of research work in London as compared with Liverpool. I have noticed of late that the Liverpool people are teaching their residents in many ways to study economic products thoroughly both from a productive and manufacturing point of view. I have been now in London in commercial life nearly twenty-five years, and abroad I have had to do with estates. When I came back to London in 1898 and began to want to settle down and learn as much as I could, I found great difficulty in London in obtaining information as regards the agricultural products with which I am connected in business, and ever since then my attention has been drawn to the lack of means for obtaining such knowledge unless you had a scientific education, which I have not had. I went to the South Kensington Museum and they kindly allowed me to use the library, and so since 1898 I have read up agricultural books and obtained some sort of knowledge, and I am now running a paper with Messrs. Bale, Ltd., who publish *The Journal of Tropical Medicine*, to try and make up for this defect as much as we can as far as London is concerned. I think that in training people for agriculture the tendency is that they do not pay enough attention to the selling of the produce when it is obtained, because sometimes an article is grown in too great a quantity and the market gets flooded, or tastes vary and that particular article is not wanted in a certain locality, whereas if they increased the quantity of another article that could be equally well grown on the same spot the man would not suffer as much loss or he would make a greater profit in the products that he is turning out.

8965. I am afraid that the information which you wish to give is a little outside the scope of our Inquiry, as you will see by looking at the terms of reference of the Committee. You must remember, please, that this Committee is not a Royal Commission appointed to enquire into a very large subject, but is a Departmental Committee appointed by the President of the Board of Agriculture to report to him, and I imagine that it is no good reporting to him on any subject outside his jurisdiction. If you can give us any information as to what is done in the Colonies and which bears on our Inquiry which we can tell the President of the Board of Agriculture, well and good?—Then I am to understand that I am not to go outside the United Kingdom?

8966. Referring to your letter, you are associated, I understand, with the West Indian trade?—Yes.

8967. Which is principally concerned with agricultural products?—Yes.

8968. Do the Governments of those Colonies provide any scientific instruction for the benefit of the planters, do you know?—I see in the last Trinidad Blue Book that they have an item of £11,800 put down for botanical agriculture, £3,400 for personal emoluments, and £8,300 for other charges, but I do not know whether that comes under scientific agriculture.

8969. That is done by what Colony?—Trinidad, one of the West Indian Islands.

8970. The Government, then, does a good deal for them?—Yes, I think the Government would like to do a great deal.

8971. Now you have some criticisms to make on the training of instructors. Do you have instructors?—Yes, we have, but I do not consider in that particular island that the men are scientific enough. I would except the President of the Government laboratory, but he is not an agricultural instructor.

8972. Are most of those scientific men trained in the Colony?—Yes. Mr. Hart is the curator of the Botanical Gardens. He has just resigned. I did hear that they were going to appoint a cocoa expert. That was mentioned by Mr. Norman Lamont, but I have not heard anything

else from any other source. I should like to see such a man appointed. He is badly wanted.

8973. How do you think these experts should be trained?—Having had a scientific education in England they should most certainly be sent round, as Dr. Preuss was by Germany, to all the cocoa producing centres to see what is doing there and compare their way of working with the way of working in the particular centre they are going to be located in. That is the only way in my opinion in which you could train them.

8974. The scientific part of their training should be first acquired in this country, do you say?—Yes. From all I have heard of Ceylon, you could get very good training here. Mr. Herbert Wright and others have come from this side.

8975. I see from the note you sent our Secretary, that one idea you have is that they are insufficiently paid as instructors to enable them to keep in the service of their Government when they are becoming most useful?—Yes, the output of cocoa at the Gold Coast was eighty pounds in 1891 and twenty million pounds in 1906, due, I understand, a great deal to Mr. Johnston. Having brought about that most satisfactory state of affairs, down comes some private company who takes away Mr. Johnston from us just when we most want him. The Liverpool people have secured Mr. Herbert Wright from Ceylon in exactly the same way. It is a difficult matter to arrange the pay, but, still, I do think it is worth noting that you lose these men just when they have obtained valuable information and been well trained in their department and when they are perhaps most wanted.

8976. But still it is an encouragement to train for such work in England because they may be assured there will be an opening for them in the Colonies?—That is so, but we want such men for the good of the country. We do not want to train such men for other people to take advantage of them.

8977. You think instructors should also be given opportunities of travelling?—Yes, because often it seems to me the student has travelled about more than the instructor. I got that information from Dr. Olsson-Seffer, who is now in Mexico, but is a naturalised Englishman. He told me he would not entertain the offer of most of our posts because of the pay, and also because of the way he is shut down on the spot and not allowed to go about as the American Government sends them about. He has just been round the world to study rubber, which is his speciality.

8978. Do you know at all from your knowledge of the West Indies whether any of the other European countries which have posts in the West Indies do more for their Colonial subjects than we do?—No, because the West Indies are a very small place. I consider that the Government in the West Indies does a good deal or shows its willingness to do it.

8979. I am talking of the Home Government?—Yes, and I too. They seem to me to be willing to do a great deal. I could not suggest a remedy, but I maintain that the planters do not show the results that they could if they followed the advice given by the Government. I find they are rather obstinate or they imagine that their own ways are the best. With the agricultural training, they seem to me, from all accounts, to get hold of the peasant and to escape the master, and so long as the output of the produce—as the cocoa output in Trinidad—does not increase satisfactorily in relation to other countries I think it is a thing to take note of, because, of course, the exports of sugar have gone down very much. But I still feel that if peasants produced cane, and they had a central factory on a co-operative basis, the West Indies would still turn out sugar to pay.

NINETEENTH DAY.

Wednesday, 19th June, 1907.

PRESENT :

The Lord BARNARD (*in the Chair*).

Lord MORETON,
Mr. F. D. ACLAND, M.P.
Mr. NORMAN LAMONT, M.P.
Mr. THOMAS LATHAM.

Mr. J. C. MEDD.
Professor WILLIAM SOMERVILLE, D.Sc.
Mr. A. E. BROOKE-HUNT (*Secretary*).
Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. CHARLES N. P. PHIPPS, called and examined.

8980. (*By Lord Barnard.*) You are Chairman of the Wiltshire Agricultural Education Committee?—I am.

8981. You have kindly consented to come here to tell us something of the work which that Committee is doing in the county?—Yes.

8982. Would you very briefly indicate to the Committee what line the work takes at present in your county—what the nature of the work is that you are carrying on?—Education in agricultural subjects, both practical and by lectures.

8983. Are the lectures held at one centre, or at various places?—At various places.

8984. You have been good enough to give us a list here of the subjects you deal with: "Bee-keeping, dairying, farriery, fruit tree pruning and grafting, horticulture and gardening, poultry keeping and veterinary instruction."—Yes.

8985. How many teachers have you?—We have sundry teachers for the bee-keeping, we have an instructress for the butter school, and we have an instructor for the cheese school. In the cheese school the instructor is Mr. Rogers, from Erlestoke Farm: he takes pupils at his farm, and he also travels about the county when asked to do so for the purpose of giving advice and instruction at various farms while cheese-making is going on.

8986. He is an actual practising farmer?—He is.

8987. What are his qualifications as a teacher? Has he ever been trained specially?—No.

8988. He is merely a practical man?—He is a practical man, and he is a considerable prize taker—in all probability he is well known to the gentleman on my left, Mr. Latham.

8989. Are your Committee satisfied with that system?—This is the first year we have tried it; we have had difficulties before because the applications were not sufficiently numerous. We had a cheese school some years ago, before I was chairman, when the late Lord Winford was chairman, and the thing rather fell through. But this year we are making another trial, and so far as one can judge I think it is going to be successful; we have had a good many applications. When I left Wiltshire about three weeks ago there were more than one could comfortably arrange for.

8990. Are the pupils men only, or men and women?—Both.

8991. How many can he take in at his farm?—I should think he could take in four or five.

8992. How long do they stay there? What is the length of the course—do you know?—I am afraid I cannot tell you at this moment.

8993. Do these pupils pay a fee?—They do.

8994. Does the county provide that fee?—No, they pay it themselves.

8995. Yet you find they are anxious to go?—Yes. It is not a large fee, it is rather charged on the principle of the people appreciating what they pay for.

8996. Do you happen to know what the fees are?—Half a crown for each course of instruction. All fees are

payable on joining the school, and visitors are admitted to watch the demonstrations on payment of 3d. That is the butter school, but it is the same, 2s. 6d., and if desired board and lodging will be provided at a reasonable cost, for the cheese school.

8997. The cheese school is more or less an informal school?—How do you mean informal?

8998. It is not very elaborately organised. You take a farmer who is a good cheese-maker, and ask him to give lectures more in the course of his business?—No; we pay him a fee. He gets about £60 for about six months' employment, and when he is moving about of course he gets his expenses paid.

8999. That experiment, I should think, would be very interesting, but you have hardly sufficient experience yet to say anything about it?—No; this is the first year.

9000. Then you have a migratory dairy school?—Yes.

9001. Has that been going for some years?—Yes, that has been going for a long time.

9002. Is that appreciated?—Very much. It has been going for some 15 years, and we have passed through pretty nearly 2,000 pupils. We have got a most excellent instructress, a certain Miss Kirke—a great deal depends upon the instructress.

9003. (*By Mr. Latham.*) You have always had a good instructress?—Yes; but we have a specially good one now. You know her well at the Bath and West.

9004. (*By Lord Barnard.*) Do you give the girls who pass through the training a certificate?—Yes, we give a card. We only give that card if they have obtained a certain number of marks.

9005. Do you hold an examination?—Yes, we have an examination. We make a difference between practice and theory. There is an oral examination and a paper examination. The papers go up to Professor Lloyd who examines them and makes a report and allots the marks.

9006. Do you think the quality of the butter is improved in consequence of this school?—I certainly think it has in some places, but there are still a number of people who make shocking bad butter.

9007. Do you know whether they get better prices?—No, I do not think they do. That is one of the difficulties. The price of butter is the same whether it is good, bad or indifferent.

9008. Is there any butter trade in the county? Does it go to London or the other large centres?—No. I think it is generally consumed in the county.

9009. Would it be possible to make butter for export?—Yes; I think it would be possible if the people would make it, but there is rather a disinclination amongst the rising and the risen generations to the work of the dairy.

9010. Are the pupils mostly farmers' daughters?—Yes. I can give you some rather interesting figures. The social position of the pupils for the last year was as follows: 107 farmers' wives, sons and daughters; 18 tradesmen, and three labourers. I do not know whether it is worth while my saying anything about the school.

Mr. C. N. P.
Phipps.

19 June, 1907

Mr. C. N. P.
Phipps.
19 June, 1907

9011. Yes.—We visited last year 8 centres, 14 courses were held and 128 pupils attended, compared with 10, 12, and 119 the previous year. Then as regards the examinations: the practice of course was better than the theory. 114 pupils were examined in the practical work and all passed. Of the 104 examined in theory 35 obtained at least 50 per cent. of the marks, five being placed in the first and 30 in the second class.

9012. Do you attribute the large proportion of failures in the theory partly to the want of education?—Professor Lloyd does. This is what Professor Lloyd says in his report. He has said so before, on one or two occasions. He again refers to the general education on the part of some of the pupils, and states that “the practical knowledge of the pupils seems to begin merely with the actual treatment of the cream given them to churn. How to obtain that cream, how to ensure it not losing any fat in the separated milk, how to treat the cream so as to prepare it and render it fit for churning does not appear to me to be understood practically. And yet in practical butter making everything depends upon this.” He goes on to say: “It is doubtful whether butter making will ever pay in England unless the best quality is made and all the bye products put to the most profitable use. These points should, I think, be kept constantly in view both by the teacher and the pupils, and all the instruction be so planned as to show how these ends may be obtained, and how from want of knowledge or skill they are frequently lost.”

9013. Lord Moreton would like to know whether you are referring to male pupils, or female pupils, or both?—Both.

9014. (*By Lord Moreton.*) I just wished to know whether it was in any sense ear-marking one sex?—No; I have had conversations with him on more than one occasion, and I have no reason to suppose that he was.

9015. (*By Lord Barnard.*) The butter instructress is one of your permanent officials in the county?—Miss Kirke, yes. When I say permanent, of course I mean from year to year.

9016. I mean, she is employed all the year round, and does nothing else probably?—All the year round—nine months. There is nothing for her to do, of course, in the winter.

9017. Have you anything more to say with regard to the butter school?—No, I do not think so.

9018. I see from the official Report here that you have a travelling farriery van?—Yes.

9019. How long has that been going?—For some years. It was first started by the late Lord Winford, better known as Colonel George Best, who was an expert in farriery. It has been going for a great number of years and I see no signs at all of any loss of interest being taken in it. When the school first began we had great difficulty in getting the smiths to come in; they were all under the impression that they knew everything about it and that there was nothing to learn. Farriery and shoeing generally was at a very low ebb in the county, but I think it has improved very much. To show the value of the school, we went last year to Marlborough, which I think your lordship will know is the centre of a good many training stables, and every smith in the district joined the course, and at the end we were obliged to have two if not three classes there. They sent me a “round-robin” expressing their satisfaction with the school, what pleasure they had felt in attending, and the great value they had received from it, and calling upon the other smiths to attend the school whenever they had the opportunity.

9020. Is your instructor in farriery, as your cheese instructor, more of a practical man than of a scientific man?—That is Mr. Hayden—he is a practical man, and a very good man. He can give a great deal more instruction than is absolutely necessary with regard to diseases of the foot and so on. What I have had to do has been rather to curb his desire to impart knowledge as to treatment. We should be in trouble with the veterinary surgeons at once if I had not, and what we want to do is to keep in with them. We have kept in with them and they are very well disposed towards us. Of course, we have a veterinary surgeon over him, a certain Mr. Bazley, who gives the lectures and examines.

9021. I was going to ask you how the result of the farriery work was tested?—By examinations at the end of the course, they are classed upon the result, and anybody that is good enough we recommend to the Farriers' Company for registration. To show, I think, that the work is well and carefully done, the Company wrote down to

us some few months ago to ask why we did not send up more men for registration. They wanted to know how the thing was done. I explained our system and said we endeavoured to be very very particular only to recommend men that there was absolutely no doubt about, and I thought it was rather in our favour that we were sending up so very few.

9022. Are fees paid for the farriery instruction?—There are fees. Apprentices pay a shilling a course and masters, journeymen and others pay two shillings. We have passed 900 pupils through the school.

9023. How long is the course?—I am afraid I cannot tell you, for I should like to be exact.

9024. Have you anything more to say as to the farriery side?—No; I do not know that I have. I may say we work in connection with the Wiltshire Agricultural Association so far as dairying and farriery is concerned.

9025. You have one lecturer in veterinary science?—We have not got a regular one, and I am very sorry we have not. We had to give it up last year because we had not sufficient money for it and several applications were made for lectures which we had to refuse.

9026. You have had a lecturer previously?—Yes; we have had lecturers.

9027. Have you had to give up anything else now we are on the subject of finance, or is there any probability of your having to give up anything else?—I should hope not at the present time. Of course, we have not taken up such subjects as agricultural engineering and the management of farm machinery. It is provided for, but we have not taken it up, or under-draining.

9028. There is not much probability as matters stand at the present time, of your being able to take those subjects up?—Not unless we can get more money.

9029. Do you yourself think they ought to be taken up?—Of course I am not an engineer and it is rather difficult to form an opinion as to whether we could do it in regard to agricultural machinery. I am inclined to think, in matters of that sort, that a little knowledge is rather a dangerous thing.

9030. I am not familiar with Wiltshire—do the large farmers in Wiltshire have smith's shops generally at their farms, and do some of the smaller repairs themselves?—Some of the very large ones do, but I cannot say it is usual.

9031. I see you do some work in fruit tree pruning and grafting?—Yes.

9032. How is that done?—That is done by lectures and demonstrations by a Mr. Sharp, who gives his full time. We pay him £100 a year. Of course, that is exclusive of expenses of travelling.

9033. Is that principally for the benefit of labourers or farmers or both?—Both. They are open classes and both come in; they are chiefly cottagers.

9034. Is an interest shown in that?—Certainly.

9035. That applies also, I suppose, to the next item, horticulture and gardening?—Yes, it is under the same man.

9036. Will you tell the Committee what you do in the way of poultry instruction?—We have a poultry instructor who is employed full time and his salary for one year is £140. Of course, I must point out that we have to cut our coat according to our cloth. I say we do it, but next year we may find ourselves unable to carry it on, but we have been doing it for some time.

9037. You have also some school gardens?—Yes, the day school gardens, of course, are under the General Education Committee, we have the evening school gardens.

9038. The day school gardens do not cost you anything?—No; we have nothing to do with the day school gardens.

9039. Does your committee spend anything on the day school gardens?—No, we spend a certain amount in advertising. In horticultural instruction, evening school gardens, teacher's courses, &c., our expenditure is £440.

9040. That is for the whole?—That is for the whole; it comes under one head.

9041. Is some of the day school garden work carried on by the General Education Committee?—All the day school garden work is done by the General Education Committee, but I have an understanding that when Mr. Sharp is in the neighbourhood, he shall cast his eye over the day school gardens: he is our servant.

9042. I see you do a great deal in your county for classes in what are called here “manual processes”?—Yes,

hedging, ditching, ploughing, thatching, and this year we have taken up sheep shearing.

9043. Those are attended principally by farm labourers, I suppose?—Entirely.

9044. Are they successful?—Very.

9045. You are satisfied with them?—Quite satisfied with them.

9046. I suppose you do not limit them to labourers. You would let a young farmer come if he wished to?—Oh, yes—in one place we went to there was a thatching class composed entirely of farmers' sons, and well-to-do farmers' sons.

9047. Do you attend any of these lectures yourself?—It is too big a county.

9048. I did not know whether you had attended them more by way of experiment to see how they went on?—No I cannot find time to attend them.

9049. Do you know whether, according to the reports made to you, the right class of people attend them?—Yes. I may say I have a general knowledge of what goes on, one makes enquiries, and the economists are always perfectly ready to supply one with information.

9050. I have not asked you any questions on the organisation in your county, because we had the advantages the other day of hearing Lord Fitzmaurice, and he practically told us of the system you had of the Agricultural Committee as distinct from the General Education Committee?—Yes. It is perfectly distinct. His Lordship was chairman, for a considerable number of years, of the Council, and he takes an enormous interest in County Council work. What he does not know of the work of the County Council is not knowledge.

9051. Would you confirm his opinion that that is a satisfactory system and works well?—Oh yes.

9052. That Committee does other agricultural work, only for those purposes it must be a distinct committee?—Yes, we act under the Fertilisers and Feeding Stuffs Act and the Dairies, Cow Sheds and Milk Shops Order. The Committee do that with the exception of the co-opted members. Of course, as you are aware, there are a certain number of co-opted members of the Agricultural Committee, and they withdraw when that business comes on.

9053. Your experience of that is so satisfactory that you think that it might be with advantage, perhaps, adopted in other counties?—It has worked very well for us, and I can only suppose that why we are so far far ahead of other counties is in consequence of our organisation; our analyses are more than twice as many as in any other county.

9054. Who acts as secretary of that committee. Have you a paid secretary?—The same man, Mr. Corbett, the Secretary of the Agricultural Education Committee, acts as Secretary for the other, too.

9055. You have a distinct permanent official of that Committee—not the secretary of the Education Committee?—Well, he is under him for general education work, and that alone. He is second man on the General Education Committee, he does our work and half his salary is put down to our debit.

9056. How often do your Committee meet?—We meet once a quarter, and then there can also be special meetings; there is a great deal of work one has to do oneself, and whenever I am in Trowbridge I go into the office and I have a great deal of correspondence; the corresponding part is very heavy.

9057. Is the Committee well attended when it does meet?—Yes.

9058. Is much interest taken in the discussions and the business by the members?—I think there is.

9059. The County is fully alive to the importance of the subject?—It is. The Council has been in a very economical frame of mind for some time owing to the general outcry as to the increase of the rates, but there has been no attack made upon my committee at all, and the general opinion seems to be that we are doing a good and useful work.

9060. I will pass away from that subject unless you have anything more to say upon it?—No.

9061. I see you have also classes for teachers in subjects relating to horticulture?—Yes.

9062. Elementary school teachers?—Elementary school teachers.

9063. Are those well attended?—They are well attended.

9064. Are they held on Saturday afternoons?—No, they are held during the holidays. We have a man, Mr. Hadley, who comes down from London and takes the scientific portion; the practical work is done by Mr. Sharp.

9065. What object have you in view by those classes?—To enable the teachers to carry on the school gardens.

9066. Do your Committee offer scholarships?—Yes.

9067. For men and women?—Boys.

9068. There are two classes I see, senior and junior?—Senior and junior. We offer two scholarships for the junior classes. We did offer two for the senior, but we had to reduce them, and we offer now only one for the senior.

9069. Where are those scholarships held?—The junior scholarships are held at the Dauntsey school and the senior at different places. At present I think we have two boys at Newcastle and in other places. There is no fixed rule about that.

9070. They are not limited?—Well, they are limited in this way that we only offer two a year. It is by competition.

9071. I mean they are not limited as to the place at which they hold them?—The juniors are, not the seniors.

9072. Provided of course that it is a college that you approve of?—Yes.

9073. What I wanted to make quite clear is that an intelligent young farmer has got an opening by which he can obtain the higher scientific knowledge in agriculture by means of a scholarship in your county if he is sufficiently qualified to earn it?—Yes. Of course we make it a condition that they are intending to take up farming, but I am not at all certain that some of the farmers' sons have eventually taken up agriculture. Of course it is very difficult for a young fellow to bind himself. He tells us that he intends going in for agriculture, and he really does intend going in for it, but after he has taken his course his ideas may alter.

9074. I suppose some of them become teachers in agricultural science?—I think so.

9075. Teachers in agricultural science of course must come from somewhere?—They must come from somewhere.

9076. And of course public facilities must be afforded for training those?—Certainly, but I understood your question to mean by agriculture as to whether they were intending to become farmers, and whether they actually did become farmers.

9077. I rather wanted to know both, but you have answered both questions, and I quite understand your view. I believe you have formed some opinion on the subject generally of grants from the Board of Agriculture for the purposes of agricultural education?—Yes.

9078. Perhaps you would briefly tell the Committee what your views are?—These are merely my ideas without having had an opportunity of discussing the matter with other people. I have simply put down what has passed through my mind on the subject. I would suggest that the Board of Agriculture make grants in proportion to the amounts expended from county funds, say something like 50 per cent. of the total expenditure, subject to the general approval of the Board. Inspectors should act as advisers, and not supersede the work of the responsible county officials; they should not seek the opinion of the teachers or instructors in reference to the administration. The teachers should look entirely to the County Committee as their masters. It would, I think, be bad in principle and in practice if the Board were to pay any part of their salaries. It might bribe some counties to engage teachers who perhaps do not yet do so. The work should stand on its own merits and not require bribing. Local authorities such as district councils are sometimes, I think, rather inclined to increase expenses such as salaries because it does not cost them anything, or at all events, very little. Any portion of the salaries being paid by the Board of Agriculture would, I think, put the Committee in rather a false position. The grant should be made for the work as a whole, the same as the Board of Education proposes to do under Section 34 of the Regulations governing Evening Classes. These are merely suggestions, I do not wish to put them as a strong opinion; it is what has occurred to me.

9079. If I may be permitted to say so, they are rather valuable suggestions and the result of your experience. In your opinion it is desirable that the county should remain the unit, and should control and organise the work?—Yes.

9080. But with the assistance and supervision of the Board of Agriculture as representing the State?—Yes.

9081. And that under no circumstances should the

Mr. C. N. P.
Phipps.

19 June, 1907

Mr. C. N. P.
Phipps.
19 June, 1907

salaries of teachers be paid direct by a central authority ? —I think it would be a mistake. I think if that was done the teachers would come to consider that they had got two masters.

9082. I have in my hand an extract from a newspaper containing a report of a meeting of your committee at which I see you yourself proposed a resolution which was unanimously adopted. Would you give the Committee some comment on what the object of that resolution was. I will not read it, it is rather too long ?—We were asked by the General Education Committee to join in an application to the Board of Education for a block grant. The matter was discussed, and bearing in view this Committee which is sitting now and what might be the result, I thought it most desirable that we should not tie our hands in any way, and we said we would under certain conditions make an application for a block grant for one year as an experiment, that we must be entirely distinct from the General Education Committee, and that all communications on the subject of agriculture should come to us direct. A copy of that resolution was sent to the Board of Education, and a copy was sent to our General Education Committee.

9083. Have your General Education Committee consented, do you know ?—I do not know anything further on the subject, it only took place the other day.

9084. You have in your county a very important school which is marked on that map—the Dauntsey School, at West Lavington ?—Yes.

9085. I think the Committee would very much like to hear your views on the usefulness of that school and the position it occupies. Are you a member of the governing body ?—No, I have nothing to do with the school except the general knowledge that an outsider has and from matters that have come before me as chairman of the Agricultural Committee in connection with this school.

9086a We are to have witnesses from the school, and no doubt they will give us their views from the inside, but your views from the outside would no doubt be very valuable to us ?—I attach very great importance to the school indeed. It is a most admirable school in every way and might be of the greatest assistance I think to agriculture. From what I hear—I may be mistaken—the school has been rather changed from its original purpose as an agricultural school, I understand, in order to obtain a grant from the Board of Education as a secondary school. I take it the Dauntsey school, like all these schools, is in want of money. I have had considerable correspondence with the chairman of the Mercers' Company on the subject of being in closer contact with them and finding more money. We do make a grant of £100 a year to them, besides sending our junior scholars there. I cannot think the policy a wise one—that is, the policy of obtaining a grant from the Board of Education as a secondary school—from the agricultural standpoint. It is the only agricultural school in the county. To meet such cases I would venture to suggest that the Board of Agriculture should give capitation grants for agricultural secondary schools, which at present they cannot do except to university colleges and farm schools and the like, although the Board of Education can. My idea is that all agricultural education should be carried on under the Board of Agriculture and it should not be placed at a disadvantage financially compared with the education given by the Board of Education. The two Boards should be placed on equal terms as regards the power to make grants. It is an admirable school in every way and is very well thought of by the farmers of the county, many of whom send their boys there.

9087. Your county have no field experiments or demonstration plots as many counties have ?—No.

9088. Neither do you give lectures nor instruction in the principles of agriculture, or in practical agriculture, manuring, and so on ?—Yes, we do.

9089. How is that done ?—You mean as far as the farmers are concerned ?

9090. Yes.—In our horticultural lectures and subjects, orchard management, school gardens, allotments, and so on. The county instructor in horticulture instructs on manures, solid and liquid, animal manures, food they contain, green manures and their value, chemical manures, food they contain and their use, and effects of manures. I know a good many farmers attend those classes.

9091. Those classes are intended primarily for gardening and not for farming ?—Primarily for garden and not for farming.

9092. I see by the return that you have a considerable area of woodland in the county ?—Yes.

9093. Do you attempt anything in the way of instruction in forestry ?—No, we have not done so.

9094. Are skilled woodmen difficult to obtain ?—I do not think so.

9095. You do not give any instruction in manual processes ?—No, they learn that on the estates under the forester.

9096. I believe Lord Bath's estate is in your county ?—Yes.

9097. I have been told, I do not know whether it is the fact, that his woods are among some of the best managed in England ?—Yes, I should think they are; they have been well managed for a great number of years, but I do not know that they are better managed than those of Bowood or Savernake.

9098. At any rate, as far as you know the woodlands are well managed in your county ?—The woodlands in the county are well managed; certainly our large woodlands are well managed.

9099. (By Lord Moreton.) Would you tell us what the age is for the junior scholarships ?—The junior scholars must be under 17 years of age on the 1st of May.

9100. And the senior students ?—They must be under 20.

9101. I do not think you told us for how long the scholarships are tenable ?—For two years, but they might be held for longer under certain circumstances.

9102. You made mention just now of a thatching class which was attended entirely by farmers' sons ?—That was one particular class.

9103. Was the idea that it should be only attended by farmers' sons ?—No, I do not think it was. It was because it so happened; it was at a place called Broughton Gifford, sufficient came to make up a class. They were not worked up.

9104. Then it was not that so many farmers' sons attended that it debarred the labourers from attending ?—No, because there were classes for the labourers as well. That was one special class which was got up locally.

9105. (By Mr. Acland.) In your county you have had for some years past a fairly complete scheme of secondary education ?—Yes.

9106. Do you, looking at the agricultural work, think that the maintenance of a complete system of secondary schools has been an advantage in preparing boys for higher agricultural instruction ?—I am afraid that is not a question that I am able to answer, because I have really no knowledge of the work of the General Education Committee. I find the work of my own committee enough to do.

9107. Is there a feeling among those who are particularly interested in agriculture that the money spent on secondary education has been well spent, or the reverse ?—There is a very great difference of opinion on that subject. Just at the present time there is rather a strong feeling in the county about secondary education.

9108. Do you find the boys who come for one sort or another of agricultural instruction of, say 16 or 17, are more fit to receive it from having been to a secondary school ?—I should think very few indeed, with the exception of the Dauntsey boys have been to a secondary school, certainly not in the country districts.

9109. It is not the habit in your county to go from the elementary school to the secondary school, and then to go on to receive higher agricultural instruction ?—No; you see the secondary education of the county is pretty well confined to the towns and to the immediate neighbourhood of the towns; it cannot be said, I think, to permeate into all the country districts. Wiltshire is a peculiar county, with large open tracts of Down, and other parts of the county where there is a considerable distance between the towns.

9110. You would not say that the success of your agricultural education has been yet much affected by the spread of secondary education ?—I do not think it has been.

9111. (By Dr. Somerville.) I notice that you go to London for an expert to conduct the examination of the dairy school ?—Yes.

9112. You have no doubt considered the claims of institutions that are nearer, and rejected them. In point of fact, do you never feel any necessity for affiliation with some central institution ?—I cannot say that I have personally. I found Professor Lloyd was the examiner

when I became Chairman of the Committee; it seemed to work very well, and we have continued him. There is no institution much nearer to us than London.

9113. I think I could name some?—I dare say—for my own information, if you would not mind, I should be very glad to hear them.

9114. I could, of course, name Reading, and Cirencester and Bristol, but Bristol is not equipped yet, and I think there was an institution in your county at Downton?—Yes, there was.

9115. The fact that you do not utilise it shows that you do not feel the need for it?—I think we are extremely well served by Professor Lloyd. I do not know that we could be any better served at Cirencester, speaking with due deference to Lord Moreton, and I do not think we could have been any better served at Downton.

9116. There might, of course, have been a personal examination if you had been in nearer touch with your examiner. I suppose Professor Lloyd does all the examining by paper?—Yes, the paper work, and Mr. Gibbons comes down and does the practical examination.

9117. Mr. Gibbons conducts the examinations for all your dairy courses?—Yes, he takes the practical part.

9118. I see you suggest it would be an advantage if the support from public funds that Dauntsey obtains were given rather in the shape of a capitation grant than as at present arranged. I suppose you perhaps hardly mean a capitation grant in the sense of so much per head, but rather a block grant, do you not, upon the teaching?—The result, I think, would be the same. My view is that the tendency of getting a grant from the Board of Education will be rather detrimental to agricultural education. Speaking perfectly frankly I do not think that the Board of Education have the same sympathy with agricultural education that I believe the Board of Agriculture has.

9119. I believe the history of that school is something like this, that 10 or 12 years ago very few of the boys were in the so-called agricultural form?—The whole thing has been altered; it is a very very old school and there was a new scheme prepared. The whole thing has been altered, I suppose, 12 or 15 years ago. The buildings are completely new.

9120. I rather thought a change came over the school when they got their present headmaster, and before that very few boys were taking the agricultural work and that since then practically every boy in the school was going through the agricultural form?—Yes, I do not know that that is quite so, but of course Lord Moreton will know. The schoolmaster that Mr. Solomon succeeded came from the North. Mr. Solomon is a very able man indeed, and has, I believe, been a great success.

9121. I know at that school the Board of Education compelled the boys to take up certain other subjects that are in no sense agricultural; amongst others, French and mathematics?—Yes.

9122. Of course mathematics may be useful to anyone, but your idea was that boys were under no necessity to take such a thing as French if they were going in for farming?—I do not quite see the object of it. If a man is going to be an ordinary British farmer, I do not quite see the object of his learning French and German and sundry other things.

9123. I think most of us will agree with you in that. You have in Wiltshire a trained expert agriculturist who is capable of giving sound instruction?—Sound all-round instruction for agricultural purposes?

9124. Yes.—Yes; an admirable man.

9125. Yet you conduct no field experiments, which rather shows that you differ from other counties in not considering these local demonstrations desirable and useful for farmers?—It is not for that reason, it is simply a case of *res angusta domi*; we have not got the money. I should like to see poultry stations, and I should like to see stations for horticultural work, and farm work, but the fact is, we have not got the money for it.

9126. You possibly have seen the so-called field experiments and local demonstrations in other counties?—I have not seen them, I have only heard and read about them.

9127. At any rate, you have no specific objection to them?—No.

9128. Possibly you may almost have a specific inclination towards them if you had the means?—I have no personal objection to them of any sort.

9129. (By Mr. Latham.) Would you have any objection to my seeing that book from which you quoted the passage

from Professor Lloyd's report?—That is it. (*Handing document*). I brought these papers with me on the spur of the moment, because it is very difficult to answer questions as to detail from memory.

9130. Your general agricultural instruction is not given at any centre?—No, in nothing.

9131. It principally consists of these dairy schools and cheese schools?—Yes, and farriery and man al processes.

9132. Will you just kindly explain what they are?—Hedging, ditching, ploughing, sheep-shearing, rick-making and thatching.

9133. That is for the labourers. I am speaking of farmers or the sons of farmers in the district. Is dairy and cheese-making and butter-making the whole of the agricultural teaching?—So far it is; mind you, it is open to them. There is no reason why a farmer or a farmer's son should not attend our classes; they are open.

9134. I quite understand. As far as science is concerned you have no classes?—No.

9135. Do you get as much money from your County Council now as ever you did for agricultural education?—We used to get more before I was chairman, and we are getting a little more now than we did last year, but one has to fight very hard for it indeed.

9136. I suppose the 1902 Act has been rather detrimental to agricultural education?—On account of the boys?

9137. On account of more money being given to secondary education agriculture has suffered?—I think so. I may say that we have extremely stiff fights. I have to fight for agriculture very stiffly indeed.

9138. Professor Lloyd in what he says here rather condemns the teaching than otherwise, does he not?—It may be taken in that way, but I do not think he does, really.

9139. May I not take it in another way that he contends you do not go far enough?—You may.

9140. And that it would be very beneficial to your dairy teaching if you had a home for it?—If we had a regular home; but then I think the difficulty about that would be in getting the pupils to attend. You know Wiltshire as well as I do, and you know how difficult it is to get about the county—means of communication are very bad, and so far as butter-making is concerned I doubt very much whether we should be able to get them to attend centres the same as we do with a peripatetic school.

9141. You have never had any lectures in the county on any specific subjects, I think?—We have had veterinary lectures.

9142. I was speaking particularly of the dairy school?—No, not as regards dairying.

9143. There has been a great deal of feeling in your county that the milk standard is too high?—Yes, I think there is amongst the farmers. Milk selling, which has become a very large trade indeed, militates to a certain extent against butter-making and cheese-making.

9144. I quite agree, but do not you think there might be a great deal of useful information given to the farmers on this particular question?—Yes, I think there might—you mean as regards feeding?

9145. No, I do not think feeding has one atom to do with it: management generally and the method of milking. If you had more money to spend, and lectures were given on market days in the market towns to the farmers generally do not you think it would be very beneficial to the industry?—I should think it would.

9146. Would not those remarks apply to cheese-making if you could get lectures given by men of some considerable experience?—I do not quite see how it would with regard to cheese-making.

9147. Cheese-making in England has been considerably improved during the last few years, has it not?—Yes, but I think an ordinary lecture on the making of cheese on the afternoon of a market day would scarcely do much good.

9148. You can scarcely have classes without having cheese schools?—We have; we have one at Erlestoke Farm at the present time.

9149. Are they moved periodically about the county?—As I said just now, we had to give them up, but we are starting them again.

9150. Will they be movable?—You mean will they be here this year, there next year, and somewhere else the year after?

Mr. C. N. P.
Phipps.

19 June, 1907

Mr. C. N. P.
Phipps.
19 June, 1907

9151. Yes—We chose the farm at Erlestoke because it was a good centre. Of course it is no good trying to make cheese down in South Wiltshire.

9152. I agree, but that is not exactly what I mean. Is it not your experience that if you give education you have got to take it to the people. They will not come to it?—Very much so.

9153. That is expensive?—Yes. You see, as regards moving your school, several considerations apply. You have got a great many things to think about and to contend with. You have not merely to think about your instructor; you have also got to think about a suitable farm house with accommodation either there or in the immediate neighbourhood for the pupils, with a proper place for making the cheese. This Mr. Rogers is a practical farmer and a practical cheese maker.

9154. Would it not be very beneficial if Mr. Rogers could go round to the several farm houses in the district and give them instruction?—He does pay visits now of that kind.

9155. I have much pleasure in speaking as to the excellent way in which your butter schools are managed, but I feel like Professor Lloyd that you do not go far enough to give them the education that is necessary, and I have no doubt you would like to see it increased.—I do not quite read Professor Lloyd's remarks in that sense. His argument is that the pupils are not sufficiently educated to start with.

9156. I quite agree.—That the general education is not sufficiently good to enable them to secure the full benefits of the school. I do not understand, and I never have understood from Professor Lloyd when I have discussed the question with him that he found fault with our instruction. It is with the education of the people before they come into the school.

9157. I quite agree with that. But Professor Lloyd says, "the practical knowledge of the pupils seems to begin merely with the actual treatment of the cream given them to churn"?—Yes.

9158. Of course there is a great deal in the management of the cream before it comes to the pupil which cannot be taught in the actual dairy, and it must be done in the home?—It must be taught in the home.

9159. Professor Lloyd also says that everything depends on that in practical butter making?—Yes.

9160. So that there is a great deal that should be taught the pupils that you are unable to teach in your present dairy school?—Yes. It would take too long where we have to get over a certain amount of ground in a certain time. If you had your school here, Mr. So and So there might say: "When are you coming our way; why do not you come to us; you must come," and so on. There is a deal of pressure put upon you as regards these travelling schools.

9161. I quite agree with you. You made an assertion that the butter trade does not very seriously improve?—What do you mean by the butter trade?

9162. The butter trade of Wiltshire?—As how?

9163. The butter as made after your pupils have left your schools?—I was not asked that question, pardon me. The Chairman asked me about the butter trade as an export trade from the county, and not the question you put to me now.

9164. May I ask you to answer my question?—Will you ask it again?

9165. Do you consider that your teaching in dairy schools has raised the butter industry of the county?—I certainly consider that there is much more good butter made in Wiltshire than there was some time ago.

9166. At the same time you do not consider it has raised the price?—No, it has not raised the price. I was asked that question, but as regards the trade, I understood the Chairman to ask me with reference to export trade.

9167. Do you consider the commercial aspect of the butter trade is seriously improved by the teaching that has been taught in the dairy schools in your county?—I think there is certainly a great deal more good butter made in the county, but if you ask me whether the result of our instruction in dairying, butter making in particular, has been that more money goes into the hands of butter makers, I must express my doubts on the subject. I do not think it has, but I am hardly in a position to say. My impression is there is not more money coming into the county.

9168. I think that is the case in many instances where the education has been more general and more thorough.—Yes. You see of course you would be able to form a very much better opinion upon that point than I can. I mean as regards the commercial side of the question.

9169. Now with regard to your farriery schools. I think your farriery schools began just about the time that the Bath and West of England schools began. I knew Lord Winford very very well, I worked under him for a good many years, and I take his position on the Bath and West of England now.—I know you do.

9170. Your schools started about the same time as the schools of the Bath and West?—Yes.

9171. The work has developed by immense strides since then, and a great deal of good has been done?—Yes.

9172. You spoke about a travelling farriery van?—Yes.

9173. Did you have a veterinary surgeon go about and lecture?—Yes; Mr. Bazley, of Devizes.

9174. There is not the slightest feeling among the veterinary profession in the district that your teaching is going too far, is there?—Not the slightest.

9175. You made a remark that you did not wish it to go too far so as not to cause any feeling in the veterinary profession?—It is not going too far; the relations between us and the veterinary surgeons of the county are very good indeed.

9176. I think I may fairly say that the farriery instruction in shoe making and placing them on the horses' feet has been generally approved by the profession at large?—Yes. You will remember at Nottingham the difficulty there was about the shoeing, and that it was pointed out at the Bath and West of England Show how bad the shoeing was, and it was remarked to you that they had no school of instruction.

9177. With regard to your scholarships, I think you made a remark that they were not freely taken up?—No, they are freely taken up, but in the higher scholarships we have only one because we have not money for more. There is a good competition, however, for them every year.

9178. By agriculturists?—Yes, we give the preference to farmers' sons.

9179. At the same time you almost fear that they do not return to agriculture after they have gone through the course?—I cannot be certain whether they do or not. I understood the question of the Chairman to be as to whether they went back on the land as actual farmers.

9180. That is what I want to know?—That I am a little bit doubtful about.

9181. Then the higher education we may almost infer from that is detrimental to the general farming interest?—I do not know that it is because as the Chairman pointed out many of them become science instructors and teachers of scientific agriculture.

9182. I am speaking of the actual farmer?—Yes, I agree with you.

9183. With regard to your not doing any experiments, do not you consider that must be a rather serious loss to the county?—I think so. I think it would be a very good thing if we had them, but it is a question of money.

9184. In consequence of your doing no experiments I suppose it is fair to take it for granted that the value of artificial manures is very little known and very little sought after in Wiltshire?—I do not agree with you there. I think there is considerable knowledge of artificial manures throughout the county, especially amongst the big farmers, the evidence of that I think is their keenness in having fertilizers analysed.

9185. I quite agree with that, but where do they get the education from?—That I cannot tell you. I suppose that they picked it up or it grew with them.

9186. This is the first time I have heard about it growing with them. Why do you have any objection to farmers learning languages?—Because I am inclined to think if they are going to be farmers pure and simple, at the top of Salisbury Plain for example, the time occupied in learning French or some other language might possibly be more profitably employed in learning something else more closely connected with agriculture.

9187. That may be possibly true, but we are so closely connected now with institutions abroad that anything in the way of acquiring some knowledge of languages would be useful?—Of course from the abstract point of view it would be useful. Knowledge is useful to everybody, but

whether a knowledge of French or German or Italian or anything you like to name is going to benefit the British farmer in the carrying on of his work I have my doubts.

9188. I suppose it is quite fair to ask the question; if you had more money you could usefully employ it?—Yes.

9189. (*By Mr. Medd.*) You are certainly in favour, are you not, of having the whole agricultural education under the Board of Agriculture?—Certainly.

9190. You have applied, I understand, to the Board of Education for this block grant for at least a year?—Whether it has gone forward or not I cannot say, but we sent a copy of the resolution that was passed to the General Education Committee. Whether it has gone up or not I cannot tell you.

9191. You are aware probably that the Board of Education is extremely anxious to control all agricultural education?—I have an idea that that is so.

9192. Has it ever been suggested to you that the Board of Education in offering this block grant under Clause 34 of the Technical Day School Regulations desire by so doing to get control of agricultural education?—It has never been suggested to me, but it certainly has occurred to me. Perhaps I might say why I am rather afraid of the Board of Education—*Timeo Danaos et dona ferentes*. We should very probably be under the Board of Education and under its inspection and they would send down most excellent and worthy gentlemen to see what we were doing, but I am very doubtful whether they would have any knowledge of country life or country people from what I have seen of them: I saw a couple the other day.

9193. In future, of course, a certain portion of this block grant will be allocated to agriculture—that you hope, at any rate. With regard to agricultural education itself, do you not think that its interests may be advanced and protected by the formation of a Consultative Committee in London of representatives from different counties and different agricultural societies to keep each county in touch with the others and to bring pressure upon the Board of Agriculture and upon the Government?—I have never thought of that, and it is rather difficult to express an opinion upon; it is rather a wide question, in anything of this sort you want a permanent body.

9194. I have submitted the question to many witnesses, and I must say they have all agreed that such a consultative committee is desirable?—It would be a good thing, but on the spur of the moment I would not like to express a strong opinion.

9195. I can quite understand that. With regard to

Dauntsey, Dauntsey is under the Board of Education at present, is it not?—Yes.

9196. You would prefer, I take it, to have it become definitely an intermediate agricultural school under the Board of Agriculture?—Certainly from the agricultural standpoint, because we have got nothing of the sort in the county, and the county is pretty well studded over with secondary schools.

9197. Perhaps you would agree with me that a school which serves a definite aim is better than a school which seeks to serve two aims?—I think so.

9198. In other words, Dauntsey to some extent must necessarily suffer from having an educational combined with an agricultural aim—I mean educational apart from agriculture?—I do not think it need necessarily do so, but what I am afraid is likely to happen is that agriculture may be pinched out of Dauntsey.

9199. You would distinctly prefer to have it as an intermediate school under the Board of Agriculture?—Yes, certainly.

9200. That is what one has been advocating for years. I suppose there is no possibility of the resuscitation of Downton?—No, I do not think there is.

9201. Would you object to submit annually to the Board of Agriculture a scheme of the agricultural education which you propose to give in Wiltshire for its advice and suggestions?—Certainly not, if we were going to get more money.

9202. The only desire is to try and systematise it, and the more one systematises it the more likelihood one has of getting money?—Yes.

9203. (*By Lord Barnard.*) We have been told in many counties which are in touch with collegiate centres that the farmers acquire a habit of asking advice and opinions from scientific men on various difficulties which arise in the course of their business. Having no agricultural lecturer you have nobody to whom a farmer can go to in Wiltshire for such advice—no scientific man?—We have not.

9204. Do you think if such advice were made available that in the course of time farmers would, as they have done elsewhere, learn to make use of it and to appreciate it?—I should hope so in course of time.

9205. We have been informed by other witnesses that it has taken years before they have done so, but they almost invariably in every case have done so in the end?—That rather covers my answer that I should say in course of time they would.

Mr. WM. McCracken, called and examined.

9206. (*By Lord Barnard.*) You were formerly Professor of Agriculture at the Royal Agricultural College, Cirencester, and you are now agent for the Earl of Crewe's estates in Cheshire?—Yes.

9207. How long have you held that appointment?—About 17 years.

9208. Previously to that you had experience as a Professor of Agriculture at Cirencester?—Yes.

9209. You are prepared to give the Committee some information on the subject of agricultural teaching in Cheshire as at present carried on?—I have had to do with that in connection with the County Council and before the County Council was started.

9210. Are you at present a member of the County Council?—Yes.

9211. And a member of the Education Committee?—I am.

9212. Has that an agricultural sub-committee?—Yes.

9213. Are you Chairman of that by any chance?—No, I am not Chairman. I have kept a little out of the working of it on account of being Examiner for the National Diploma and so as not to be too much in contact with the students, some of whom I have to examine.

9214. You wish to inform the Committee of the origin of agricultural teaching in Cheshire?—Yes, that was started about 1889, I think. There were five landlords who guaranteed the salary of a lecturer, and we engaged a lecturer, a Cirencester man, and he visited chiefly the

grammar schools and other schools as well, and went about amongst the farmers a good deal and he got to know the farmers and to know the farming of the county and did a great deal towards laying the foundation for what was done afterwards.

9215. That was in 1889, the year the Councils were established?—Yes, but before the County Councils had taken up the subject of agricultural education.

9216. Then the County Councils some years afterwards took over that work?—Yes, they took over the work and engaged some more itinerant lecturers on the same system and then they gradually settled down to have a college with a staff there.

9217. We have had very full information from Holmes Chapel and from Worleston so that we need not trouble you unless there is anything special you wish to impress upon the Committee with regard to those schools?—No.

9218. You consider that lectures are of use to farmers?—I think they are of very great use if the lecturer is in touch with them. I know in that case they were because he got to know the farmers and they had confidence in him and that led them to send their sons.

9219. This system of lecturing still prevails in Cheshire?—Not outside lecturing much; it is chiefly inside the College.

9220. Why have the county ceased to give outside lectures?—I think they got nearly as many students as they could accommodate from almost the beginning. In the first instance outside lecturing had no connection with

Mr. C. N. P.
Phipps.

19 June, 1907

Mr. W.
McCracken

Mr. W.
McCracken.
19 June, 1907.

the college, because the College was not thought of then, and afterwards it was carried on in order to create an interest in the county, but now I think the interest is considerable all over. There was a very great deal of prejudice to overcome in the first instance, but that has been overcome, and now there is not the same need for itinerant lectures, although I think more of it might still be done profitably.

9221. You have experimental plots in the county?—Yes, but that branch has not been developed very much. I think it ought to be done more.

9222. You have an experimental farm at Holmes Chapel?—Yes, there is an experimental farm there.

9223. So that unless you want to differentiate from what goes on at Holmes Chapel do you think the experimental plots elsewhere are not necessary?—Yes, I should think they are, because the soil differs in various parts, and I think experiments should be carried on in several different places because it is a drift soil at Holmes Chapel and most of the soil in Cheshire is on the red sandstone marls which are considerably different.

9224. You think the itinerant system is not of very much use to the farmers owing to the college system, and you think also it is of very little use to the small holders?—I do not mean exactly to say that. I think it would be better if there were more outside lectures than there are at present to keep up the interest and if there were a few experimental plots in different parts of the county to show the different results of the manures on different soils. I think farmers would get to appreciate the pounds, shillings and pence of it better in that way.

9225. The farmers know the Holmes Chapel School and have confidence in it?—Yes.

9226. They apply a great deal to them for information on different matters?—They do.

9227. You have an idea that practical schools for small farmers' sons and labourers' sons for the manual work of a farm would be an advantage?—I think they would.

9228. Would not they be very expensive to establish and maintain?—Unless they could be worked in conjunction with some other institutions they would be expensive.

9229. Do you know anything about the Farm School at Basing?—No, I know nothing about that.

9230. Or the Newton Rigg Farm School in Westmorland?—No.

9231. They are both excellent institutions, and the class for whose benefit they exist cannot afford to pay anything for the instruction?—That is so, and I do not think it would be any use unless the equivalent that they would be earning for their parents, in addition to the fees for the teaching, were in special cases provided for them. That is done in some cases by the County Council.

9232. So that it would be a very expensive matter to carry out such a scheme as that?—It would be, no doubt. Might I just add to that that I think if there were something in the way of technical schools for labourers and small holders it would be an advantage? In Cheshire we have an immense number of small holdings, and I think the teaching for those people ought to be quite different from what is taught at the college, so as to avoid those labourers' sons from getting out of touch with their work at home. They should be kept absolutely in touch with their work the whole time, and kept in training for it, because one notices that a good many of them go off to other, and in some cases less advantageous, occupations if they are taught too many outside subjects.

9233. Are many of these small holdings vacant?—None.

9234. Then some of these boys must therefore drift away to other employments because there cannot be a living for them to be earned on the land?—That is quite true, and many of them do. There are an enormous number of works in the county and they go off to those.

9235. You wish to give the Committee some views as to the present value of the work which is done by collegiate centres, I think?—There is a tendency in many councils to concentrate slaughter-houses to facilitate inspection. I know we have had it under consideration in our County Council a good deal, and I think in connection with colleges some of those slaughter-houses should be open to students to have a right to go and see the animals before they are slaughtered and examine them carefully, and perhaps have competitions as to their weights and value and then see them after they are slaughtered. Their veterinary as well as their agricultural professor might accompany them. That would be of great use because many of them lose

touch with values while they are at the college. When boys leave college they very often have the vaguest ideas as to the actual value of sheep and cattle, and they are sometimes very much out of touch with that when they go back to practical farming.

9236. That is a matter which should be corrected by the managing body of the institution if pressure could be brought to bear upon them either by the public who are interested in the question or by the Government inspector. It is a detail really?—Yes, it is; but I think it is a very important detail.

9237. Are you of opinion that such a point as that can be taught sufficiently well in a college instead of being acquired by practical experience?—I think a student could learn a very great deal in that way, because if he saw the animals alive and had an opportunity of handling them and of judging their weight, and were then to see them after they were slaughtered and to see them weighed, it would be a very good experience. I do not think he could get much experience from attending an auction mart.

9238. Most of the witnesses before this Committee and most of the writers on the subject, and probably, I think, most of the members of the Committee, are agreed that science in agriculture is valueless without practice; is not that just one of the questions which can only be dealt with by practice?—I think it is a connecting link.

9239. You think some instruction should be given in it to give students an intelligent mind on the subject to enable them to acquire knowledge afterwards practically for themselves?—Yes, when a boy leaves college he goes home, and if he has brothers who perhaps have not gone to college they probably know more of the values of live stock and farm produce than he does, so that he may have a good deal of unnecessary lee-way to make up.

9240. We have been told by most of the witnesses here that, in their opinion, for a man who is actually going to farm the land, it is very desirable before he commences his scientific instruction say at college, that he should have had practical work on a farm, generally, of course, on his father's farm?—Yes.

9241. He would hardly forget the practical knowledge he had learnt with his father during the two or three years at which he was at college?—No; only he is at such an age when he goes to college that he would not have been able to acquire much knowledge as to the values of stock, and if he is perhaps three years away he loses that time in what affects his success as a farmer eventually, most of all, and if this instruction were given, he might have an opportunity at college of learning what he could not get at home at all.

9242. You do not think that the bulk of the practical farmers of this country are turned out from college?—No, I do not.

9243. Education at a college is not a *sine quâ non* for a practical farmer?—No, but it gives him a great advantage over those who have had no college training.

9244. College education is rather for men who are intending to take up positions as science instructors and teachers in agriculture, and so on?—I do not know that that is the view taken in some other countries where they consider science is necessary for the practical farmer and that it helps him to make farming pay.

9245. You mention here the facilities that are given in America. Have you been to America?—No. I have never been to America.

9246. Perhaps you read the American publications?—I have known a good many people who have judged at shows there and who are fairly conversant with what is going on in the country.

9247. You tell us that this system which you advocate is actually in operation, of giving students facilities of judging live stock?—That is at certain of the shows; they take them round the shows before the judging is done, and each student has to judge for himself and then afterwards compare his results with those of the official judge.

9248. You think drawing would be of value as an aid to agricultural education?—As an examiner one misses it very much now. In replies to questions on implements and in many other departments such as botany and veterinary physiology, for instance, I do not think more than five per cent. of candidates are able to make a rough but accurate diagram of what they are asked to describe.

9249. That is a deficiency in the general education of the country rather than in agricultural education?—It is, but one finds it out in connection with agricultural education. I believe the elementary education department generally are trying to improve the instruction.

9250. Of course you do not want to turn out exhibitors at the Royal Academy, you just want them to be able to make a very rough sketch so as to be able to illustrate what they mean?—Exactly. I think nothing does more to train the powers of observation and to impress the essential features of an object upon the memory than making a careful drawing of it.

9251. The scientific portion of the training, you say, should be accurate and scientific. Have you any reason for supposing it is not accurate and scientific?—Not generally; but in some cases too much stress seems to have been laid upon making the teaching *popular*, the result being want of accuracy and of a clear grasp of the subject.

9252. Where are these examinees that you speak of trained?—One only knows them by numbers.

9253. (By Lord Moreton.) Are you referring to these examinees for the National Diploma?—Partly for that, and partly for the Surveyors' Institution.

9254. They would be very much of the same class?—Yes.

9255. So that they would have had very much of the same class of education before they came to you?—Yes, very similar.

9256. Probably that would be the highest class of education?—Yes.

9257. (By Lord Barnard.) You have an idea that agricultural teaching is rather too local. Would you explain what you mean by that?—What one finds in a good many candidates coming from particular institutions is that they only know the agriculture of their own neighbourhood or that of the institution where they have been taught; they do not seem to be much taught as to the practices which prevail in other districts which might be profitably applicable to their own.

9258. I believe Scotchmen come to places all over England from the Scotch colleges, and some Englishmen go to Scotland to be trained?—Yes, a great many.

9259. Would you agree with me in thinking although in the case of some men who were going to take up agricultural teaching or the work of agricultural analysts, or traders in agricultural manure or agricultural business of some description, it may be very desirable that their knowledge should not be limited to a certain district, yet, on the other hand, we know how farmers do remain in the one district, and for the actual practical farmer it would be very useful to him to have the actual local knowledge?—I quite agree that local knowledge is of the first importance to a farmer, but a wider acquaintance of other districts might often help him to improve his methods and to enable him to adapt his practice to changes of times and circumstances.

9260. It strikes me if you are going to get your students, particularly smaller farmers' sons or even larger farmers' sons, to go to institutions far away from their homes you are adding to the cost of training them?—I was not meaning that so much as their being taught in the lecture room or on the farm what other practices might have been adopted for the growth of a particular crop, and how stock are treated in different parts of the country. For instance, one observes it a good deal in the case of examinees from dairy farms; they know the dairying practices thoroughly, but a great many of them know nothing at all about sheep or any other department except what comes directly under the head of dairying. I do think if the Board of Agriculture could do something by giving to a few of the very best men some travelling scholarships it would be a very great advantage to those who are going to teach afterwards.

9261. Would it be your opinion that those travelling scholarships should be given by the County Councils or the Board of Agriculture, because again it means money?—It does, but it would be very much better if it were done by the Board of Agriculture, because the County Councils are so much hampered by the question of rates that it would hang fire I'm afraid if it were left to be done by the councils.

9262. You are making a suggestion which is new, that is that the Board of Agriculture should itself actually expend money in scholarships. Up to the present that has never been done at all?—Well, the grants might be given to the County Councils to expend it in that way. I think it would be a very great thing for the future training of teachers, at any rate.

9263. (By Lord Moreton.) I should like to ask you, with your great experience of the National Diploma examination, whether you think it would be an advantageous change, instead of holding it on the present lines, to have it conducted by two national societies, and to hold it under the superintendence of the Board of Agriculture, with an advisory committee of experts and agriculturists, and, instead of holding it in one centre as it is held now, to hold it in various centres of England, according as there might be a suitable crop of candidates, and make the examination of a much more practical nature than it is possible to do at present. They might, for instance, take a student for a walk on to the farm, and "pick his brains" with regard to his knowledge of agriculture and natural science in the way of entomology, botany, and so on. Would that, in your opinion, be a move in the right direction, turning it if possible into a more practical examination?—The examination would be more practical, and it certainly would be more efficiently conducted, if the practical part could be introduced as your lordship suggests, and I think probably it would give weight to the examination if it were under the Board of Agriculture, perhaps in conjunction with a committee of the two societies, the Royal and the Highland. If it could be done so as to maintain something like an even standard it would be an advantage, but that would be perhaps more difficult than if the examinations were conducted at one centre. Of course when they are examined at one place you have an absolutely even standard.

9264. That was the principal reason why the two societies instituted the examination as they did, was it not?—It was. Would it be worth superseding the examinations of the colleges themselves for the more local part of it and retaining the other as the ultimate and national examination?—that would be my idea.

9265. You have asked me a question, and I will retaliate by putting it to you. What would your answer be to that question?—I do think on the whole that one central examination would meet the purposes for which that particular examination is held better than having local examinations at different centres.

9266. Of course we know your long connection with Cirencester. Do you consider that Cirencester as an agricultural college is well equipped and well situated for the purposes for which it exists?—I do.

9267. Do you think the curriculum is suitable for those who go there—in other words, sons of landowners and men who are going to become land-agents, and also a certain number of agriculturists?—For that purpose I believe it is.

9268. You think it is a practical and suitable curriculum?—Yes, for that purpose.

9269. A great deal of attention at present is being turned to forestry. Do you agree with me that Cirencester is unusually well situated for a student to study Forestry, considering the very well-managed woods of Lord Bathurst that there are in the neighbourhood and the not very far distant Forest of Dean and other wooded estates?—I think there are certainly very great opportunities there.

9270. (By Mr. Acland.) May I ask you just this big question about the present grants given by the Board of Agriculture. First of all, whether you consider the money at present distributed could be better distributed, and secondly in what directions you think more money, if there were more money available, is most needed in the country as a whole?—I do not know that I have thought that carefully over, but it seems to me in some districts it would not apply but, in the districts that I know best, where there are a great many small farmers, a certain amount ought to go towards paying their expenses, or rather, reducing the cost of their education. In many parts where there are small farmers there is great difficulty, not that they do not want to go or that they are not intelligent enough, but their parents cannot spare their help or what they would earn while they were away.

9271. Do you think if it were possible to give more that the Board of Agriculture would be justified in giving more towards assisting small farmers to obtain additional education in agriculture?—I think it would be a very good thing for the future of farming in this country.

9272. You attach real importance to it from the point of view of the future of English farming?—I do. So many small farmers, if they are good men, gradually increase their holdings and become larger farmers by and by, and it would fit them for a larger scope when they are able to take advantage of it, and I think the future of our farming depends a good deal upon that.

Mr. W.
McCracken.
19 June, 1907

Mr. W.
McCracken.
19 June, 1907

9273. Would you say it was rather education than want of land which at present prevents the development of small farms in England?—I could not answer that question, I do not think, at least not without having thought it over first. I think it would be probably part of both: I do not think it could be ascribed entirely to either one or the other.

9274. Have you come to any conclusion as to the direction in which money is very particularly wanted at present?—I think it is most particularly wanted in the directions I have mentioned before with regard to cheapening the cost for the smaller people who cannot afford to go to college otherwise.

9275. (*By Mr. Lamont.*) Do I understand that you consider that the sons of small holders are more alive to the advantages of agricultural education than the sons of the larger farmers in the country?—No. I do not think so. I think the converse really is the case.

9276. The need with them perhaps is greater, although the desire may be less?—I think so, and it would perhaps not be a bad thing to try and instil the desire.

9277. You were speaking about the cost just now, do you not think that the small farmers in this country could afford what is the average cost in Denmark, for instance, where, at the secondary agricultural schools the ordinary fees are about thirty shillings a month, inclusive of board, lodging, and education, and at which cost the education is very largely availed of by the farmers, who, as a rule, are mostly small farmers?—Yes, I think something like that would probably induce a great many more to take advantage of it. I think in most cases some charge like that could be made, although, of course, in some cases it could not.

9278. May I take it you agree with me that for a small holding policy to be a thorough success not only is agricultural education necessary but it is absolutely vital also to instil the principles of co-operation among the small holders?—I do think so.

9279. Would you further agree that something in that direction could be done by means of education in co-operative methods?—I do think so. I do not think small holdings would have a very good chance of success in many parts without something in the form of co-operation being organised.

9280. (*By Mr. Latham.*) I would like to ask you a little more about this judging by weight. Do you know Shrewsbury market at all?—Yes.

9281. You are well aware that all animals there are weighed?—Live weight, yes.

9282. I think you said there was not much to be gained by attending an auction?—Not from an ordinary auction where they do not see the animals killed afterwards.

9283. That is my point, but they could go and see the animals killed if the chance was given to them. I do not see how any possible information could be given to them on that point in the colleges. You would not keep a large lot of beasts for the young men to judge live weights?—No, I did not mean that. What I was referring to was that in connection with our own County Councils there has been a good deal of agitation to have the slaughter-houses of butchers concentrated in central places, where they could be better inspected. If that were carried out, and the killing of animals concentrated in certain places, any pupils in the neighbourhood might have the right given to them of going to those slaughter-houses and judging the animals' live weight, and seeing them killed afterwards and weighed.

9284. Do you think if the farmers in the neighbourhood were to allow pupils to go and see their animals killed it would be useful?—Yes, that might be useful.

9285. They must get the knowledge somewhere?—That is so.

9286. At what age do you recommend these young men to go to the colleges?—I should say about 15 to 16, perhaps.

9287. Do not you think it would be a very great advantage if they got their practical education before they went?—Of course if they are on a farm they practically always do; they get a great deal; at any rate, I think they ought to have enough to enable them to appreciate what they are taught when they go to a college.

9288. To put it in another way, it is much better for them to get the practice before they get the science?—Part of the practice, because the improvement of practice takes one's whole life, does it not?

9289. I quite agree, but do you not think if they took the

scientific part first they might be likely to lose their liking for the practical part afterwards?—That might be so in cases, but if they are farmers by nature I should think the extra teaching they got would only go towards increasing their liking for farming.

9290. I value your evidence to such an extent on this particular point that I should like what you think in this matter to be exactly recorded; that is, if the farmer is to have any real benefit from science, it must be got by adding the science to practice rather than by adding the practice to science?—Yes, I think the most successful teachers in agriculture have all been farmers to start with, and have learnt the practice before they have gone to college—of course, that is as far as the college age admitted.

9291. Now with regard to farmers remaining in the localities in which they have been born, did I understand you to say that you thought it was necessary for them to migrate about to try and get fresh ideas?—No; what I have had to complain of in conjunction with my colleagues at some of the examinations is that the students showed too local a knowledge.

9292. Your idea is that it would be a very great advantage if agriculturists could be placed with some of the principal farmers in other districts for a time, so as to broaden their views?—Yes. I know a good many cases where that is done, where a farmer sends his son to a totally different part of the country—exchanges him, really, for another farmer's son, and they are supposed to help their host in the farm work while they remain with him.

9293. If scholarships could be given to some of these more advanced farmers in the counties, in the way of travelling scholarships, it would be of great advantage to these young men?—Yes.

9294. You think it would be money well spent?—Yes, and even in some exceptional cases, if scholarships were given for them to go abroad.

9295. Supposing the Board of Agriculture recommended scholarships to the several County Councils, what sort of scholarship should you recommend them to offer?—Do you mean travelling scholarships?

9296. No, any sort of scholarship for agricultural education purposes. What should you say would be the best kind of scholarships for the Board of Agriculture to recommend, provided they did recommend it, which I do not think is at all likely, the County Councils to offer. Would you recommend them to offer them to the farmers that we have been speaking of, or to the colleges and other scientific centres?—Scholarships have been only instituted in reference to colleges before, and I have not yet thought of the other idea, but no doubt it might be a very good one.

9297. Perhaps you know as well as I do that farmers are not particularly well off, and a scholarship offered to a local man would be quite as readily taken up as if it were a scholarship offered to a scientific centre?—Yes, but of course that I think would be an entirely new departure, and I cannot say that I have thought of that.

9298. I agree it is a new departure, but we have had it recommended here and I think a great deal of it myself. In the position you hold, you have no doubt a large experience of practical and scientific agriculture, and do you not think it would very much broaden the ideas of young men if they could get sent out to different stations?—I think it would do a great deal of good.

9299. If the Board of Agriculture did think right to commend scholarships it would not be at all wise, perhaps I might say, if these scholarships were confined entirely to science?—No, I think it would be very useful indeed. I think it would be a very good thing also if some sort of register could be kept of farmers to whom the sons of farmers in other parts of the country could go.

9300. You say in the more advanced schools and colleges you do not recommend much manual work. I suppose I may say you think the manual labour or the agricultural education from the practical side should be learnt before they go to these places?—I do, because I think if you mix too much practical work with study at a college they cannot do both well. A student is liable to go to sleep over his books in the evening if he has been working a good deal during the day, and he would not be so able to do the reading work.

9301. With regard to doing actual work with their hands, do not you think it is very advantageous to have a farm attached to the scientific centres?—Yes, I should think it is absolutely necessary.

Mr. W.
McCracken.
19 June, 1907

9302. You say, "By arrangement with Farmers' Associations of Grain Merchants samples with current prices might be regularly supplied and competitions as to values." What do you mean by "competitions"?—What I was rather intending to convey was that students might be supplied with samples and current prices, and, after a certain amount of instruction, might themselves compete in the way of judging the qualities and expressing opinions with regard to the current values.

9303. Would you give a certificate or anything of that sort?—Yes, they might have a certificate for the best number of points over a season, or something of that kind, perhaps. One notices with a good many students that even the commonest kinds of grain and seed that they do not happen to have seen on their own land they are very often ignorant about, and frequently absolutely ignorant as to their value.

9304. From those remarks one would almost infer that the ordinary farmer's son is more illiterate than he used to be?—In regard to knowing market prices?

9305. Yes, it is your experience that farmers' sons are not so well enlightened as they were years ago?—No, I do not think that is so, but formerly only the sons of landowners and the largest farmers—public school boys for the most part—went to colleges, now the majority are drawn from elementary schools. The average standard of education of the few who went to colleges up to fifteen years ago was consequently broader in its nature than that of the many at the present time.

9306. Because it is quite a new departure from anything I have heard of before that farmers' sons should be taught by grain merchants the value of grain and wool and cheese. We have not got to auctions yet for selling grain?—No, but I think students are liable to get out of touch at college with the actual prices, and I think it would be something towards giving them a better idea of the practical business that they will have to take up afterwards.

9307. You do not think having seen his father selling his own grain would be a sufficient education to the young man?—There is no reason why he should not get more. I think the more experience he gets the better, because it would all come easily in the curriculum; it would work in without taking up any extra time.

9308. I am not quite sure where you would have to go if you began teaching all the values and prices of grain and wool and cheese, &c., in the College. How would you be able to teach the value of wool in a college?—I do not think that would be very difficult if they had been in the habit of having samples to go by and of following the market prices.

9309. I take it you would have samples sent in from the different wool sales of all the different classes of wool, and let the students value them?—Yes, with numbers perhaps attached to them together with a schedule of prices. I think it would be very useful in making them take an interest and keep up their interest in that branch of their business, and in what is going on in the markets while they are at college.

9310. That would apply to cheese and butter and different things?—Yes, as far as practicable.

9311. You suggest a very great deal as to students learning about the current values of live stock and judging as to live and dead weights, and that sort of thing. Have you ever thought anything about price values?—In connection with live stock?

9312. Yes.—It would be with a view to that, of course.

9313. Would you take them to the market and let them value the thing prior to its going to auction—value them for themselves first and then see what they fetch afterwards?—Yes.

9314. Have you done any of that?—Yes.

9315. Do you find they get pretty close to the prices?—Yes, but, as you know, auction prices vary enormously in relation to values.

9316. (By Mr. Medd.) With regard to the children who would attend the schools of which you spoke, do not you think the age of 15 or 16 is rather high? Would they not most probably have forgotten all they had learnt at the elementary school by that time?—I should hope not.

9317. One's experience is, I am afraid, that when they arrive at the age of 15 or 16, their reading, their compositions and their arithmetic are extremely defective, so defective indeed that for teaching purposes you have to begin again practically. Is not that your experience?—I was not

referring so much to the labourers as to the farmers' sons for the colleges.

9318. I was referring to where you say "Farm labourers and small holders obtain less benefit from College than from itinerant lectures." Then you go on to say that practical schools would be an advantage for small farmers' and labourers' sons?—Yes.

9319. At what age do you think they ought to go to these practical schools?—I should think in that case immediately after they leave the elementary school.

9320. Exactly; at the age of 13, that is what I wanted to say. Have you seen one of these schools in France, the *école pratique d'agriculture*?—No.

9321. Or have you seen the *école primaire supérieure*?—No, I have not.

9322. From what you have read about them would you agree that a school of that type, the *école primaire supérieure* with the agricultural side, or the *école pratique d'agriculture* is the type you want for the small farmer's son and the labourer?—I am not sufficiently acquainted with the working of those particular schools to give you an opinion.

9323. Do you know any of the Dutch schools?—No, I know Swedish schools more particularly.

9324. I do not know them myself. What is the age at which they go there?—I think they are older, if I remember. It is some years now since I was there.

9325. We have to deal in England with a population who are very averse to going to school at all except under compulsion so that in dealing with these labourers and small farmers' sons we must take them at the earliest possible age if we are to get them at all?—Yes, I do not think you would get the labourers' sons later.

9326. No, they must be got the moment they leave school?—Yes.

9327. So that a school of this type is what you would advocate where a great deal is given to practice, and only sufficient science to enable a man to understand the causes of the commoner farm operations?—That is exactly what I mean.

9328. That is the type of school that the *école pratique d'agriculture* represents. Reference was made here, I think, by Lord Barnard, to the great expense of establishing such schools in each county. Probably you would agree with me that it would not be necessary for each county to provide a school of that grade, two or three counties might combine and provide one?—Yes, and I do not know whether it would not be possible for these boys to do a certain amount of work on the farms in the neighbourhood.

9329. That has never been found to answer, but you would agree the *école primaire supérieure* is the type of school which could be provided in any central village to which the children could be conveyed by cart or to which they could walk. Have you considered that type of school—a higher elementary school?—Something of that kind, I think, and the nearer it could be brought to their own doors the more you would get to come.

9330. With regard to bursaries, there seems to be a sort of confusion. Were you not referring to bursaries which might be awarded by the State to the children of deserving parents, bursaries, I may say, of three kinds, bursaries merely to cover the cost of maintenance, that is where the child had to sleep away from home, and bursaries in exceptional cases to provide the instruction and also to compensate the parent for the loss of the child's wages?—Yes, something of that kind. I suppose that could only be done by the local authority by arrangement.

9331. As we know they are done in France by the Government, the local authority administering and giving the advice as to the recipient?—Yes.

9332. That is the sort of thing you had in mind, I think?—Something of that kind.

9333. In regard to Cheshire, is any exceptional education given on the Peckforton Estate?—Not that I know of.

9334. Do you know whether they have any system of co-operation there?—I do not think so.

9335. Yesterday we had the Vice-Chancellor of Manchester University speaking in reference to the possibility or the probability of developing an agricultural department there somewhat similar to the existing department at Cambridge. I think you are an Alderman of the Cheshire County Council, are you not?—Yes.

9336. It would be extremely desirable that Cheshire should be a county affiliated to such a collegiate centre as

**Mr. W.
McCracken.**
19 June, 1907

might in that manner be developed at Manchester, Manchester being for practical purposes only for agricultural research. Perhaps you are not, at a moment's notice, prepared to say how far you would recommend it in Cheshire?—One would have to see the scheme first and know all about it.

9337. You quite see the desirability of affiliating counties to collegiate centres if we are to have any systematic provision of agricultural education in the country?—Yes, we have that in certain directions in the county, but not connected with agricultural education.

9338. Yes, I know you have, but you are not connected in agriculture because Manchester has nothing to offer you in the way of agriculture?—That is so.

9339. Do you not think that Cirencester is well qualified to become a collegiate centre for Gloucestershire and a group of different counties near?—Yes, I should think so.

9340. It would be extending its great past usefully by occupying such a position in the future?—Yes, of course there would be some difficulty with regard to the details.

9341. The details would be a matter for consideration, of course?—Yes.

9342. (*By Lord Barnard.*) I have been informed by Mr. Brooke-Hunt on one question I put to you that as a matter of fact the Essex County Council did give a travelling scholarship to one of their teachers. He travelled about a good deal, and it was of the utmost benefit to him, and he now holds a post as lecturer to the County Council, so that the suggestion has been tried and it has been found successful?—I did not know that.

9343. You are familiar, of course, with the system by which estate agents to private landowners take pupils?—Yes.

9344. Do you think that it is a satisfactory system? Do you think that these young men learn much?—I am rather interested in that because I have some myself and therefore I do not know that my answer would

be quite unbiassed. In my opinion pupilage with a land-agent should always be supplemented by a full college course of study.

9345. I dare say you are acquainted with a good many members of your own profession?—I am.

9346. Do many of them begin as pupils?—I think the majority of them.

9347. Taking land agents as a whole (I suppose I need hardly ask you) do you consider they are fairly well equipped to perform their duties?—I think so.

9348. Many of them farm themselves?—Yes. The majority of large estates have land in hand and a home farm.

9349. Therefore they have very good opportunities of putting their practical knowledge into operation?—They have.

9350. With regard to the system of a farmer in one part of the country sending his son to a farmer in another part of the country and receiving that farmer's son in exchange, we have been informed that that system is already in operation?—Yes, I have known a number of cases. I know one case where a Lothian farmer sent his son to Northumberland for a year, and the Northumberland farmer sent his son to the Lothians in exchange. They do as much work as they can, and the system is a success.

9351. It need not be an exchange, need it?—Not necessarily.

9352. Supposing the County Council were agreeable to pay for it, and you had a suitable instructor and a pupil who would benefit by the instruction, because, of course, it would be a waste of money to give scholarships to those who did not intend to profit by them—do you think that such a system would be advisable?—I think it would be advisable in addition to his college training.

9353. Do not you think it would be advisable without college training?—Yes, but I think college training is necessary to every farmer who is going to farm on a large scale.

Mr. CHARLES H. EADY, called and examined.

**Mr. C. H.
Eady.**

9354. (*By Lord Barnard.*) Would you just tell the Committee what your present position is?—I am farm steward and assistant agent to Lady Wantage, at Lockinge.

9355. How long have you held that position?—About 30 years.

9356. Then your experience, we need not say, is very large?—Yes, in that part of the country.

9357. I do not know whether you know the object we have in sitting here. The President of the Board of Agriculture has requested us to inquire as to the provision which is now made for affording scientific and technical instruction in agriculture in the country, and to report whether, in view of the practical results which have been obtained, the existing facilities for the purpose are satisfactory and sufficient, and if not, how they could be modified or extended. Have you any view that you would like to give the Committee on the facilities which at present exist for giving scientific and technical instruction in agriculture?—I think all those places should be associated with a farm. I do not think they can learn farming out of a book, and I believe most of the colleges have a farm attached now.

9358. Of course you are aware that many of the county councils have done a great deal of other work in instituting lectures, not only on farming, but particularly on dairy work and on bee keeping and poultry keeping, and so on?—Yes. I should say that the lectures on the dairy work have been very successful. I think the quality of the butter has been greatly improved where the lectures have been given. I know they visited Lockinge, where several farmers' wives and daughters attended the classes, and very good results were the consequence.

9359. I wonder whether you could give us your opinion as to whether butter makers have been able to reap greater pecuniary advantage in consequence of these lectures. Do you think they get higher prices for their butter?—I am not able to say that. I should hardly think they do. I think it is perhaps more in the matter of home consumption

that the farmers' wives benefit—in the butter they consume at home. I do not think there is much marketing of butter done, or that there is much pecuniary benefit from selling the butter.

9360. Do you think there is much advantage in farmers having a knowledge of chemistry, especially with regard to artificial manures and so on?—I think it is of advantage, but I think it is a thing that you can get all the knowledge you want by sending to a professor. I do not think it is worth while for a farmer to send his son to college in order to get knowledge that he can get much better from a professor for half-a-guinea, just as when you are ill you send for the doctor.

9361. That knowledge must be got from somewhere. The doctor must be trained somewhere?—Certainly.

9362. I suppose you would agree that it is desirable the professor should have a practical knowledge of farming also; not merely a laboratory education?—Yes; I think the two ought to go hand in hand.

9363. I do not know whether you know that a very large number of these teachers and professors of agriculture have come from off farms?—No, I do not know that. I know of one teacher who was a farmer somewhere in Oxfordshire at one time, but I do not know whether he was successful as a farmer.

9364. They have not all been farmers, I suppose, but they have come from farming stock as a rule. You do, I suppose, know of cases in which farmers have consulted agricultural chemists and scientific men?—Yes.

9365. Do you think that has been of value to them?—Certainly. I have questioned them myself about different things, and I think the present Professor of Agriculture at Reading has taught me a thing or two, but more particularly as regards fruit trees. I am sure he taught my working gardener more in a few minutes about how to prune fruit trees than he ever knew before—more, perhaps, than he would ever have been able to teach me about farming.

Mr. C. H.
Eady.
19 June, 1907

9366. Your opinion is that a trained teacher can teach in a very short time what it would take a very long time to acquire by experience?—That is so.

9367. You think that is an advantage to aim at?—Yes; but I think the practical teaching would be more lasting.

9368. You know twice as well as I do, I suppose, farming in this country is not very profitable?—Well, it would be profitable, I think, if the land was let at a cheaper rent. The great fault in farming now is that the land is let too dear. It ought to be let at the same price, according to the price of produce as it was 40 years ago, and then farming would be as successful now as it was 40 years ago.

9369. What is your opinion as to the provision which is now made for the education of agricultural labourers in some counties? I dare say you are aware that classes are provided for giving manual instruction in various counties. What county are you yourself concerned with?—Berkshire.

9370. Is there anything in the way of classes for hedging and ditching?—No; nothing of the sort.

9371. How do you think the labourer should be taught his work?—You want a good practical man. You want a good hedge-cutter to take a young man to go with him and the same with a thatcher. Let him first of all serve the thatcher, as we call it.

9372. Do not you find that those good practical men are decreasing and that something must be done to keep up the supply by teaching the young ones?—That is so, and we try to do it by sending the young men with the old ones to get that instruction.

9373. Do you give prizes to them at all?—Only to shepherds for rearing lambs.

9374. Do you know anything of field experiments and demonstration plots?—We have tried a few experiments for the college at Reading.

9375. Have you found that an advantage. It probably would not be more of an advantage to the college than to yourself?—Yes; we did it for the college so that they could bring the students over and see what we had done.

9376. You in common with other agriculturists get the benefit if there is any benefit?—Yes. We get a little benefit from the way they manured the grassland. We had some plots on the downs and we gained the same experience as the professors and students.

9377. I think they issue leaflets and bulletins from the college?—Yes.

9378. Do you read them?—Yes.

9379. Do you find them of advantage to you?—We do.

9380. Have you any woods in Berkshire of any extent?—We have some woods on the Downs but they are not very extensive.

9381. (*By Lord Moreton.*) Many witnesses have given us a good deal of evidence about the advantages that the country at large derives from the system the Board of Agriculture have of local Correspondents. Have you ever found much advantage from that system?—Not at present.

9382. Do you know who they are in your district?—I do not—Mr. Adams, I believe, is one, but Mr. Latham could tell you better about that.

9383. If you yourself do not know I can hardly assume that the ordinary small farmer in your district is likely to know more than you do, or to get very much advantage from them?—No.

9384. (*By Dr. Somerville.*) You say you are supplied with leaflets and reports from the college at Reading?—Yes.

9385. Do you know that the Board of Agriculture issue a large number of leaflets intended to benefit practical farmers?—I understand they do.

9386. Have you come across those leaflets at all?—No. I only get the market reports every Sunday morning, for which I pay 6s. 6d. per annum—and a very good thing it is and very well written, and very correct reports I think they are.

9387. You are quite satisfied that you get benefit from that report?—I am.

9388. We have had that report brought before this Committee, and it has been stated that the figures published in it are not given in a form in which they are of service to agriculturists, more particularly, for example, I remember it was said that a market will be reported upon as having shorthorn store cattle sold at 37s. to 42s. per live cwt., and it was said that such a quotation as that did

not help farmers at all?—I think it would. I do not see why it should not, at all. You know how many cwt. a bullock ought to weigh, and you would be able to tell what those were worth by what they were fetching.

9389. It was contended that the limits of the figures, 37s. to 42s., were too wide?—It depends upon the quality of the bullock, of course.

9390. And the age also—the younger the age at which they sell a bullock, the higher the price per cwt.?—Yes. If they put the price 37s. to 42s. per cwt. it would be quite as good as putting “£14 to £20,” or anything of that sort. Unless you were to see the animal you could not tell nearer.

9391. I have been following these reports for the last few weeks, with a view to ascertaining how much I should ask for my wool, and I have failed to find any market reports for that. Have you found any difficulty in that respect. There has been no end of wool sold during the last two or three weeks, and this is just at a time when farmers most want that particular information?—The market has just commenced, you see, so that there could not be any knowledge to put in print yet.

9392. I think they have been going on long enough for quotations to appear. Lord Barnard was going to ask you about forestry, but I think you said forestry with you was not a matter of very great importance? Not with us.

9393. I think you have some hundreds or thousands of acres of woods?—Hundreds, not thousands; but it is coppice more than wood. We utilise the underwood for making hurdles for our sheep.

9394. Do not you sell any of it?—No.

9395. Are you able to supply all your own requirements?—No, we buy a good deal.

9396. Do you pay as much for it now as ever you did?—I believe so.

9397. You would say, therefore, that those who have underwood to sell are able to command as good a price as they did 15 or 20 years ago?—I should think so.

9398. Your experience is quite different from the experience of many other people in England?—Possibly.

9399. Your condition of affairs being so satisfactory, I do not know that I need ask you any more. What is your position? Are you general manager of Lady Wantage's estate?—Only of the farms in hand.

9400. Including the woods?—I have nothing to do with the woods. We have got a forester with the men under him. The only thing I have got to do with them is to cut the hurdle-wood for our own use.

9401. The system of forestry there, namely, cutting over a crop of underwood every 12 or 15 years is so simple that I suppose you do not find any necessity for technical education of that sort?—We do not.

9402. (*By Mr. Latham.*) Your education as a farmer's son, which I believe you are, has been of a very varied character?—I do not know that it has been of a varied character; it started from the cradle. I do not know that it has varied very much.

9403. You have been educated in the ordinary way and the whole of your education as a farmer started with your father and you have added to it upwards?—Yes.

9404. You have had an enormous practical experience?—That is so.

9405. Do you consider the education of the ordinary practical farmer can be improved?—I think it can be greatly helped.

9406. Tell us how?—I think it would be a very good plan for any farmer to send his son to college for about a year; but I do not think he can learn farming at a college; you cannot learn farming out of a book, any more than you can learn to ride out of a book; but I think it would be a great help to him to go for a twelve month.

9407. You think the type of knowledge they would get at these scientific colleges would be an advantage to farmers' sons?—Yes, for a twelve month, but not to keep him there and think you were going to make a farmer of him in two or three years. That, in my opinion, would be impossible.

9408. Your general knowledge of life has been very varied and very successful, but if you had had a little science as well, possibly you might have been better off even than you are?—I might have been, but I do not know where it would have come in. I might have learnt a little about artificial manures, but I can get that at

Mr. C. H.
Eady.
19 June, 1907

present at any time by paying 10s. 6d. to have the manure analysed.

9409. Do not you think that learning the composition of soils is of use to you?—I think it would be a waste of time for a farmer. I think he would soon get to know all about that himself if he were on a farm for a little while. He would soon know the needs of the soil and what it wanted and what it could do if he was at all observant.

9410. Do you think they can teach a man to value stock at any of the scientific centres?—No, certainly not.

9411. Or the weight of stock as it comes to market?—Certainly not.

9412. Do you think it an advantage to have these sort of guessing competitions in show yards?—They might be a little amusement to them. I think if you have a college farm you want all the different breeds of cattle to teach these young men the difference between a Shorthorn and a Devon, and a Sussex and a Hereford, and to know what they are best adapted for. Some breeds are adapted for one thing and some for another; and you want to know also what your land is adapted for, and then pursue that to the best of your ability. Practice is the only thing that will teach that.

9413. Those sort of things cannot possibly be taught at a college?—In my opinion they cannot.

9414. You spoke just now of dairy instruction and said you thought it had been of very great advantage to the county?—Yes, I think so where they visited. I think they taught the farmers' wives and farmers' daughters the proper temperature at which to scald their churns, and little things like that.

9415. That was not restricted to farmers' daughters?—No, unfortunately it was not. People went out of curiosity—doctors' daughters, and lawyers' daughters—and never troubled about it afterwards, and they occupied places that ought to have been occupied by farmers' daughters.

9416. With regard to the farriery schools, has there been any great advantage to the county at large from those?—There has been no advantage that I know of. All I know is we sent our best man to compete for a prize, which he won, and the instructor in farriery offered him more money to go and teach others, and we had to find somebody else.

9417. I have always heard it spoken of as a great advantage to the county that you have been able to teach such a good man?—That might be, but he left us, and we had to teach another.

9418. That brings me to another part of my question, that is, your actual practical life has been of very great service to you and others?—Certainly it has.

9419. I do not think that we should decide from your evidence that science is no part of your curriculum?—No, I do not wish you to think so, I think that practice and science is a very good thing, but you must have a greater proportion of practice.

9420. Speaking of land agents, do not you think they are very much improved in their work by a little science?—No doubt of it.

9421. They are of much more value to the community at large by having had a certain amount of scientific education?—Yes, and it would be a good job if they had more of it, but they are very often made from the wrong people.

9422. Have you seen any serious things happen in consequence of a farmer being scientific?—No. We have got none of that sort; we have got some very bad farmers, but they are not very scientific.

9423. Have not you known men who have taken up too scientific a line in agriculture, and have possibly suffered?—I think if they did they would soon fail.

9424. With regard to the rent question that you referred to; if a man is going to take a farm, would it not be better that he should have some instruction either from his father or from some scientific centre as to the value of land, and whether land is likely to be of a certain value to him or not?—Of course it would, but his father would be the best authority to teach him that, not a college.

9425. But fathers are not always the best authorities?—They ought to be educated with practical knowledge.

9426. Unfortunately "ought" does not stand for much. If a father has been successful, is there any reason why his son should not try and be still more successful?—Certainly not, but it is not from want of scientific knowledge, it is often from want of capital and want of energy that they are not successful.

9427. All men have not suffered from want of capital?—That is so.

9428. I think I could show you many men who have suffered from want of practical knowledge as well as from want of scientific knowledge?—Yes.

9429. You have had some experience of agricultural lectures. Have you been to any when they have not been very successful?—I have. We had one professor come to our place some years ago, and he had a meeting in the village, and he told the men who kept pigs that the manure from them was of no value; he would give them a recipe by which they would be able to put their fingers into their waistcoat pocket and take out sufficient manure to put on their allotments, and somebody called out "yes, and you would be able to put your fingers in the other pocket and take out the produce."

9430. He was rather made fun of?—Yes, and when the lecture was over we asked him two or three questions which he could not answer at all.

9431. Lately you have been hearing Mr. Percival lecturing at Reading, I think?—No, I have not heard any of his lectures.

9432. You know that they were very much appreciated, I think?—They were. He lectured on malting barley and that kind of thing, but I did not happen to be present.

9433. You do not complain of lectures being given at different places, your complaint is against the lecturers?—Yes.

9434. If you get a good sound straightforward man who knows what he is talking about, farmers would come and listen to him?—They would.

9435. And benefit by him?—No doubt; you can always learn something if you keep your ears and eyes open.

9436. There is no feeling against the system of giving lectures, the only thing is that, unfortunately, particularly in our county, we started with poor lecturers?—Yes.

9437. Going back to these market reports, which I think a very great deal of, you say you receive them every Sunday morning, and you find them very useful?—Yes. I appreciate them very much, I think they are very well written and they give a very correct account of the stock, and whenever I attend a market I look to see afterwards whether the reports are right when I get back, and I find they are.

9438. Your experience of markets is large?—Yes.

9439. A good deal of stock has passed through your hands?—Yes.

9440. Do you think it would be more valuable if the reports appeared more than once a week?—I do, because there is a long time to wait for some of the reports, and if they appeared twice a week instead of once you would get quicker reports of some of the markets, because one market may be held on a Monday, and you, therefore, would not get those reports until the following Sunday, and if they were published twice a week you would get the information in the middle of the week and it would be a benefit if you could get your information sooner.

9441. That would be more expensive, of course?—Well, we pay 6s. 6d. a year now; I do not think it would cost very much more.

9442. I do not think you use a great deal of artificial manure. Do you take advantage of the Fertilisers Act?—We have done.

9443. Have you found it any good to you?—We have. We have found the manures to be what they were thought to be. I think the Fertilisers Act has frightened the manufacturers, it has done them good.

9444. Science helps us in that way, does it not?—Yes, but you have no business to use artificial manure. If you want to make farming pay, you want to have always something to sell, and never to have to buy anything. If you do the sheep well, and use your own hay and straw, and just a little artificial manure to help the roots, the swedes and the turnips to grow away from the turnip fly, you ought not to want anything else; there is a great deal of money squandered away in artificial manures. A farm ought to be like a leg of mutton, and produce its own basting.

9445. By selling your hay and straw and bringing back artificial manures, you might have more money to put into your pocket, might not you?—I do not think so at the present price, hay 60s. a ton, straw 24s. a ton.

9446. It has not always been so cheap as that?—No, but it is not very dear and it never will be again.

Mr. C. H.
Eady.

19 June, 1907

9447. (*By Mr. Medd.*) Can you tell me what the quality of the labour in your district is?—Very good and very cheap.

9448. You have no cause to import labour?—Not at all. We have an abundance of labour.

9449. To what do you attribute its good quality; I mean in regard to the more skilled branches of farm work, hedging, thatching, rick building, draining, and so on?—We have men who can do all that, and do it well.

9450. They learn it from father to son, I suppose, in your district?—Yes.

9451. In other parts of Berkshire that is not the case?—It is with us. We have plenty of labour, and good labour.

9452. Do you know any other part of Berkshire where the conditions are different?—I do not.

9453. (*By Lord Barnard.*) They are probably all estate labourers that you get, who learn from father to son?—No, I have nothing to do with them; the estate labourers are nothing to do with me at all.

9454. (*By Mr. Medd.*) Probably your wages are higher, is not that the real reason—you probably pay higher than the local rate?—No, we avoid that because it offended the farmers. They were doing that at first when I went to Lockinge, but it upset the farmers very much, and I put a stop to it.

9455. In answer to Lord Barnard you spoke about instruction in hedging being of value for the labourers?—Yes, we let the young men learn from the old ones.

9456. Take the case of these more or less skilled operations that I have mentioned, hedging, rick building, thatching and draining, do you allow the lads on your land to learn from the older men?—Yes, and very often they are their own sons that they teach.

9457. Of course, you have no necessity to apply to the other farmers for permission to use their hedges and land for that purpose?—No, we have plenty.

9458. You cannot say that your experience applies to the rest of Berkshire?—No.

9459. (*By Mr. Latham.*) Farmers ought to teach their men themselves?—Of course, they ought.

9460. The great secret at the present time is that they do not know how to do it?—It would not do for me to say that, but, I think, it is the fact that they do not know how to do it themselves. If they had been brought up as they ought to have been brought up they would know how to do it.

9461. In the old days they did know how to do it?—Yes. There was a period when farmers were very successful, and at that time their sons went in for fishing and shooting and cricket rather than farming, and now that period has gone by, and things have altered, the farmers have come back to teaching their sons again.

9462. The great secret of why your men are so satisfied is the excellent cottages provided for them on the estate?—No. As I say, we do not get the men from the estate, many of the cottages are occupied by estate labourers, such as carpenters, blacksmiths, &c. We get all our men from the villages and the different places round. We have a few cottages belonging to the farms for carters and shepherds.

9463. Still, after all, the privileges that your people have are such that most farmers cannot offer?—I do not know where the privileges come in. We are master over them and they have got to do their work. I do not let any of the men be master over me. I am master, and they

know it; but I treat them well and they do their work well. We have over 400 on the farm.

9464. Driving through Lockinge, as I have done frequently, I might term it a pattern village?—It is a very nice village, but the cottages that you see with nice gardens are occupied by men working in the gardens.

9465. It is a great advantage to work for Lady Wantage, and you seldom lose a man who once goes to work for her?—I do not know that that is so at all.

9466. Have you many changes?—Well, we keep the good men and sack the bad ones.

9467. Most of them have been with you many years?—Not most of them; a few of them have. As the young men grow up they want to go as soldiers and policemen. We have a difficulty in keeping the young men. We keep them as long as we can, but a great many of them leave us.

9468. But you have a number of young men working for you?—Yes, we have a good many young men. A lot of them go into the army and the militia, and come back again in three years perhaps.

9469. (*By Dr. Somerville.*) I was very much interested in what you said, that a farm ought to be like a leg of mutton and supply its own basting?—Yes.

9470. But I think you qualified that by saying that you "did" the sheep well?—We do all the stock well, sheep have plenty of roots with some corn this: enables one to grow good crops.

9471. You do not buy much cake?—No, very little.

9472. You think a farm should be self-maintaining except for the purchase of a little artificial manure to start the roots?—Yes; I think the great thing in growing good crops is cultivation more than anything else. They go to plough sometimes when the men ought to be in bed and the horses as well; there is as much in cultivation as there is in manures in growing good crops.

9473. You admit there are some farmers in your district who are bad farmers?—There are a good many.

9474. You also said that these farmers were not troubled with much science?—No, not much of anything.

9475. In other words, we may say that bad farming is associated with ignorance of scientific knowledge?—It is, but still more of practical knowledge.

9476. (*By Mr. Latham.*) Will you tell us a little about your book-keeping?—What do you want to know?

9477. First of all, you issue a balance-sheet every year?—We do.

9478. Will you tell the Committee how far you go into book-keeping?—We keep a debtor and creditor account. We have no scientific book-keeping. My books are kept at the office, and I have very little to do with keeping them.

9479. The farm books are all kept there?—They are kept at the office.

9480. The material is all supplied by you?—Yes; what I buy and what I sell, but they keep the books for me at the office.

9481. (*By Lord Barnard.*) The form in which the books are kept is not arranged by you?—No; we have one of the Brampton Farm Account books which were brought out by Mr. Beasley, and we keep those, and the clerk sees that the books tally with the farm in every way.

9482. All you do is to keep a payments and receipts account?—Yes. We pay everything by cheque.

9483. You hand the information into the office and the books are made up there?—Yes.

9484. Are they properly audited?—Yes; they come up to London once a year to be audited.

Professor T. W. CAVE, F.R.C.V.S., called and examined.

9485. (*By Lord Barnard.*) You are a Fellow of the Royal College of Veterinary Surgeons?—I am.

9486. You at present hold the appointment of Professor of Veterinary Science at the South Eastern Agricultural College at Wye?—That is so.

9487. Do you engage in private practice, or are your services entirely given to the College?—I am entirely engaged by the College.

9488. How long have you been at work with the College?

—Five and a half years, and I had been a teacher for ten years before that. I was engaged in private practice as well until I went to Wye. I combined the two.

9489. You have had at any rate 15 years' experience in teaching?—Yes.

9490. Will you be good enough to state, as shortly as you can, your views on the subject of teaching lads veterinary science in such a college as Wye?—I most certainly think it is of great use. The plan on which veterinary science is taught at Wye is for the first year to take elementary

Professor
T. W. Cave.

Professor
T. W. Cave.
19 June, 1907

anatomy and physiology, dealing of course with the structure of all the animals at the farm and the functions of the various organs. That occupies 12 months. From that we go on to the common ailments of farm stock, teaching the causes and prevention and symptoms, and a very little first-aid treatment. Then in the third year I deal with diseases coming under the Contagious Diseases (Animals) Act, and the regulations which should be observed. That is briefly the scheme which is adopted at Wye.

9491. You do not attempt, I gather from what you have told us, to make a student a veterinary surgeon in any sense of the word?—Most certainly not.

9492. All you attempt to teach him is a sufficient elementary knowledge of the subject to enable him to benefit by veterinary science if it should be necessary?—Quite so.

9493. Do all the students who come to the College go through your hands?—Almost all. Of course there are occasional students who come for special subjects, but all the Degree and Diploma students have to take the course.

9494. What examinations do the students go in for?—The B.Sc. degree of the University of London, and they also go in for the College Diploma and the National Diploma.

9495. Is there an examination at your College?—Yes, each year.

9496. Do you set the papers?—For the Diploma at the end of the course, the first year, second year, and third year we have an outside examiner who examines in my subject.

9497. Do these lads show any appreciable result of your teaching. Do you think that they acquire the knowledge you are anxious to impart to them?—I think so, most certainly. They are very keen on the subject, and I think I may say it is one of the most popular subjects taught at Wye.

9498. Do you think it advantageous, having regard to the very stringent regulations which exist at the present day on the subject of the diseases of animals, that every practical farmer should have an elementary knowledge of veterinary science?—I think that is absolutely essential, especially in regard to the recognition of disease and the causes and the prevention of it. Treatment I barely touch upon, because I have to be most particular, of course, not to go beyond what I may term "professional etiquette"; I do not wish to damage any of my fellow-practitioners in the district.

9499. I think that is the view of most teachers in your position?—We have to take that view; we are compelled to do so.

9500. In spite of that you still believe there is considerable value in the teaching you give?—I am most certain of it.

9501. In addition to your work in the College you give lectures in the county outside?—Yes.

9502. That is to actual practising farmers?—To actual farmers.

9503. Are they appreciated?—I think I may say in the 15 years I have lectured to something like 30,000 farmers, they average 2,000 each winter session, and that has been in five different counties—Nottinghamshire, Leicestershire, the Lindsey division of Lincolnshire, and Kent and Surrey.

9504. Do you find that farmers ask questions at the close of your lectures?—Yes, they are very fond of coming and asking questions privately; they are very diffident about coming forward and asking questions publicly so that the others may benefit. I may say with regard to lectures in the counties that the success of lectures very greatly depends upon the local secretary; I mean in getting hold of the right people. I do not wish to say anything about the clergy, but if we have a parson as a local secretary then it is possible we get a failure.

9505. (By Lord Moreton.) I think it will add to your evidence if you will tell us the titles of a few of the lectures you have given?—I have brought copies of the syllabus with me. (Handing same.)

9506. I see here common ailments of horses?—Those are for the town lectures.

9507. And common ailments of farm stock?—Yes, for village lectures.

9508. You give a series of lectures at different centres?—Yes.

9509. I see altogether there are six lectures?—Yes, the course generally extends over two years, three lectures in one winter at a centre, and I usually follow on the next winter with the remaining three.

9510. (By Dr. Somerville.) What amount of time do you give to the teaching of agricultural students at Wye during their first, second, and third years respectively?—The first year students have three hours a week, that is 33 hours for the term. The second year students have two hours a week, and the third year will have one hour a week in each term.

9511. Do they do any practical laboratory work?—As far as it is possible in the case of illness on the farm; they are always invited to see anything that is going on, but of course the supply is limited in that respect.

9512. Does the College kill its own meat so to speak; does the farm supply the College with its meat?—To a certain extent. The fat stock is frequently supplied to the local butcher and comes back in that way to the kitchen.

9513. Animals are not slaughtered at the farm?—No.

9514. Do you try to make a point of seeing that all agricultural students do actually have the opportunity of handling the digestive organs, we will say, of the important farm animals during their college course?—Certainly, I have frequent demonstrations.

9515. It is not a case altogether of lectures, books and diagrams?—No, of course we have no dissecting room or post-mortem room, but as far as it is possible to do it under the circumstances I have frequent illustrations on the smaller animals, in particular, sheep, for example.

9516. Do you carry out any experimental research work for the benefit of the farmers in the counties?—Yes, that is one of the chief parts of my work at Wye—research work.

9517. How is that prosecuted may I ask? Do you wait until the farmers come to the college and represent that they are in trouble over some mysterious disease?—I am in constant correspondence with farmers in different parts of the two counties. Of course it has been a thing that has been gradually growing up. I was the first to hold the appointment at Wye permanently, and in the five or six years that I have been at Wye it has been gradually extending, and I think now I may say I am pretty well known to the farmers in the district, and they are constantly applying for information, and when it is a disease about which very little is known I attempt to find out the cause of it.

9518. You do not find that this work of yours interferes in any way with the work of the ordinary veterinary practitioner, I mean the taking up of particular diseases and supplying information to farmers?—I always avoid giving farmers information on the actual treatment. I am quite willing to work out the causes and the preventive measures quite freely, but so far as actual treatment goes, beyond the actual first-aid treatment I do not go.

9519. I was rather referring to diseases that you say might require experimental research. You have, in fact, amongst the sheep of Romney Marsh, a very mysterious disease that goes by various names?—Commonly known as "Struck."

9520. Yes, that is a disease that might be taken in hand by the College, is it not?—Yes, that was one of the first diseases I had an opportunity of enquiring into after going to Wye.

9521. Have you completed your researches in that disease?—I have not yet completed the work with regard to preventive measures which may be adopted, the work is still going on.

9522. You are not in a position to tell the Committee what conclusion you have arrived at with regard to that troublesome disease?—I have come to a very definite conclusion as to the nature of the disease, that it is of microbic origin, and if not identical, it is closely allied to the disease of blackquarter in cattle. It is very analogous to it, and I am endeavouring to find some method of preventive treatment which will be successful.

9523. You not only instruct in anatomy and physiology of farm animals, but also in dentition?—Yes.

9524. There would be no objection on the part of a professional man to your giving the students instruction in dentition?—I teach the students dentition and judging ages by the teeth, but at the same time it requires an amount of practical experience to judge by the teeth, and I think, when students have to buy valuable animals, they will still apply to the veterinary surgeon for that part of the work.

9525. In my experience I have found that a qualified veterinary practitioner, a member of the Royal College of Veterinary Surgeons, does find himself a good deal limited

Professor
T. W. Cave.

19 June, 1907

in lecturing to farmers. I think you have already told us that you also find yourself under pretty severe limitations?—I certainly always have felt the limitations, and I have always bound myself most strictly down to what I may term first-aid lectures, which may be compared with the ambulance lectures with regard to the human subject.

9526. By observing those limitations, you have always been able to get on with your professional colleagues in the neighbourhood?—Yes, with very few exceptions. I have had veterinary surgeons coming and taking the chair at my meetings, and I have heard them express the opinion that if the students followed my teaching it would be not only of benefit to farmers, but also to veterinary surgeons.

9527. I should imagine farmers must be rather disappointed when you lead up to the point that you want to take them to and then leave off. Do not you find at times that they are disappointed when you stop just at a point where perhaps they would like you to go on?—No, I have never had a single complaint of that sort. I have always told them there is plenty to learn as to diseases of animals; the causes and means of recognising diseases and first-aid treatment without going on to the general treatment.

9528. It is difficult to know where to stop and where to go on, is it not? Take the case of foot-rot for example. In many parts of the country farmers never think of calling in a veterinary surgeon to advise them with regard to the treatment of their sheep's feet. As a veterinary surgeon, possibly you might not think you were entitled to go as far as to instruct a farmer in the treatment for that disease?—I deal with the subject of foot-rot, to take that disease again, for example, and try to teach as much as possible about the causes and prevention and so on. With regard to the treatment, that is generally in the hands of the shepherd, and I decline to recommend any particular drug. I simply put it in this way, that in pretty nearly every case the drug which is used is a caustic or an antiseptic, and I say, "You can use whichever you like."

9529. You would not go to the length of saying to them, "You may try a five per cent. solution of copper sulphate." You would think that went a little beyond the limits of professional etiquette?—I do not think, taking foot-rot as one of the diseases, that I should be strictly bound in that case. The Veterinary Officers of the Board of Agriculture have published a leaflet on the treatment of foot-rot.

9530. I mentioned that disease because it was a doubtful case?—It is a doubtful case, and it is a disease that is generally treated by the shepherd himself, but if I could advise a better treatment, I do not think I should hesitate to do so, because the veterinary surgeon would not be done an ounce of harm.

9531. The reason being that in most cases of that description, a veterinary surgeon would not be called in unless it happened to be a very valuable animal?—Quite so.

9532. Another case which is also doubtful is milk fever. I suppose you would go as far as giving instruction as to the general treatment of the animal before she calved?—I always begin what I may call the first-aid treatment of milk fever by suggesting that it is an illness in which it is advisable to call in the veterinary surgeon promptly, but in the meantime to take certain steps, the giving of an aperient medicine if it has not been actually given, and so on.

9533. You would go as far as recommending the medicine?—Quite so; that is first-aid treatment.

9534. You could not very well recommend the medicine without recommending the quantity that should be used?—Yes, I should give them the quantity.

9535. You are getting very near to giving them a prescription?—Every farmer knows the property of Epsom Salts as a purgative.

9536. Yes, but I was rather referring to the quantity?—There are very few farmers who do not know the quantity to give. Of course, I should not go into any questions of injection or inflation of the udder, or treatment with oxygen; that would be outside the instruction altogether.

9537. (By Lord Moreton.) With regard to the instruction of the pupils at the College, are the cases of illness among the stock sufficiently large to give you an adequate supply in the way of object lessons?—There are cases of illness, but, of course, we have not an extensive supply.

9538. What I was rather referring to was as to whether you had anything in the nature of a free hospital?—We have not.

9539. I suppose you know that is done at some colleges?—Yes, I believe it is done at Cirencester.

9540. I suppose you would have an objection to instituting a hospital on account of the local prejudice it might be likely to create?—Yes; there would be opposition raised up against the college by the veterinary surgeons if we did such a thing.

9541. (By Mr. Latham.) I know a little about first-aid myself, and I am at a great loss to know how you can possibly take all these subjects that are down on these papers without going beyond first-aid and getting into trouble with the veterinary surgeons?—Well, I can only say I have done it for 15 years.

9542. There is so very little to be said about the dropping after calving unless you say something about the remedy?—There are heaps of facts which every farmer ought to know about the disease quite apart from the actual treatment.

9543. A healthy animal going to bed at night might be quite down in the morning?—I hope you do not want me to give you a lecture.

9544. No, I do not; but I am afraid yours must be a very difficult position?—No, I have not found it so. The farmers, I must say, have always been most appreciative, and where I have had veterinary surgeons present they have supported me in every possible way.

9545. I can understand it in the syllabus of lectures, but when teaching the students you do not expect them all to know about aperient medicines, do you?—I teach the students on that syllabus, but instead of a single lecture, it may take half a dozen weeks.

9546. With regard to telling the age of horses by their teeth, that is a very disputable question?—It depends on the age.

9547. Up to a certain point anyone can tell?—Quite so, but afterwards it is only approximate. One can only give general indications that a horse is 15 years old, so that a student will not be foolish enough to buy him and imagine he is only six.

9548. No farmer who was going to buy an aged horse would take the veterinary surgeon with him to tell him how old the horse was?—I do not suppose he would.

9549. In running over this list of diseases there are some things at the present moment troubling many of us who are a long way from being students, such as glanders, anthrax, and so on. Do you teach on those?—Yes, they come in my third year's course to the students.

9550. Do you include those subjects in the lectures?—No, I have not included those because of the term "common ailments."

9551. I suppose it would not be possible to teach on those because you would be getting into dangerous ground?—I do not think so. With regard to glanders and anthrax, I think they are subjects that could be easily dealt with, but as far as I am concerned, the subjects I have got down on the syllabus are those I have found from experience to be subjects the farmer wants to know something about rather more than glanders and anthrax.

9552. It is only recently we have had the trouble upon us. The detection of glanders and anthrax is almost beyond veterinary surgeons themselves, is it not?—No; I must object to that.

9553. I have known men make great mistakes lately?—In which disease?

9554. Both?—I do not say I would teach a student to make a microscopical examination of the blood and to be able to say what was anthrax.

9555. Then with regard to glanders, it is just the same. It is a very difficult thing for the farmer to detect his animals if they have glanders?—Yes, it is a very difficult thing for a farmer to say that his animals had got glanders, but I should teach him in this way; certain symptoms, discharge from the nostrils, enlargement under the lower jaw, might possibly point to glanders although the same symptoms might be met with in other diseases. It would be a mere warning.

9556. One of the diseases that is troubling us in England very much at the present time is swine fever?—Yes.

9557. I see you have not troubled about that?—No, I have not got that down there. I have only picked out those diseases which, as a practitioner, I have found the farmers are usually most anxious to know about, and, of course, my time is limited with regard to these lectures.

9558. I am not so much talking of the lectures as of the college curriculum?—I use those papers, that I handed to

Professor
T. W. Cave.
19 June, 1907

you, for the college—I use those for the lectures, but that does not cover the whole of the College subjects. In the third year I take the diseases which come under the Contagious Diseases (Animals) Act, which includes glanders, anthrax, rabies, and so on.

9559. (*By Lord Barnard.*) Am I right in thinking that in some cases, at any rate, farmers are very fond of making use of old-fashioned and entirely unscientific remedies?—They are very fond of it.

9560. Is that practice decreasing?—I think it is.

9561. Is one of your objects to put a stop to it and to encourage intelligent treatment?—It is one of my great objects to do away with old-fashioned methods and, as far as possible, to do away with the use of quack remedies.

9562. I do not know anything whatever of veterinary science, but in my farm stock I have, occasionally, suffered from abortion in cows, and my bailiff has a very strange remedy for that—I dare say you know to what I refer?—Yes.

9563. That is a fantastic remedy, is not it, for which there is no scientific basis whatever?—Quite. It is a remedy, however, that is practised by many farmers who have a great faith in it, but I do not think there is any scientific basis whatever for it. That is a subject that I deal very frequently with in lectures, and almost exclusively in one lecture—abortion in cows is a very favourite lecture of mine.

9564. Before adopting any remedy a farmer ought to have some scientific assistance if it is not within his own knowledge?—Certainly.

9565. Do you keep in touch with the Royal Veterinary College in London?—Certainly.

9566. Because I imagine persons in your position would very soon get out of date with what went on if they did not?—Quite so. I may say that there is no body of men more quick to find out whether a man is keeping himself up to date than farmers, and at any meeting of big farmers, a man who was lecturing would very soon be pulled to pieces if he was not quite up to date.

9567. (*By Mr. Lamont.*) I think you said in reply to Dr. Somerville that you would not think it fair to teach farmers in the cases of milk fever the injection or the inflation of the udder?—Quite so.

9568. I was in Denmark last year, and found it was very commonly practised there—almost universally. Do you not think it would be advantageous, without doing any harm to the veterinary surgeons in the country, if our farmers could perform the simple operation required in the treatment of milk fever?—I have formed an opposite opinion to that because the use of the Schmidt treatment in unskilled hands is likely to cause the loss of the udder, and unless sufficient antiseptic treatment is given it is very dangerous; that is why I oppose the adoption of the Schmidt treatment by the farmer himself.

9569. You think before such an operation as that could be safely entrusted to the farmers in this country, that their agricultural and veterinary education will have to be carried a step further?—I certainly think so; they are not ready for that yet.

9570. Your objection in fact is not so much the injury it would do to the veterinary profession, but the injury it would do to the farmer himself, because he has not sufficient skill to carry out such an operation with satisfactory results?—I am opposed to it on both grounds.

9571. (*By Dr. Somerville.*) There is another disease I should like to ask you about as to what attitude you take up with regard to it, that is “gid.” In some parts of the country that I know the farmers, or certain farmers, and in some cases shepherds, are very successful in operating for “gid.” In some cases it has been attended with good results, but in other cases the animal has had to be slaughtered. In no case in certain parts of the country is a veterinary surgeon called in for “gid.” What attitude do you take up with regard to that. Do you instruct your students in any operations with regard to “gid”?—No, I do not. I teach them, of course, about the presence of the *hydatid* and the fact that the operation can be done and is done in certain cases, and I put it very strongly, that it is only in certain cases that a veterinary surgeon could relieve by operation. That it is done in some cases by shepherds is perfectly true in certain parts of the country, but good results would be a very small percentage.

9572. You agree that this disease must either be operated upon by the shepherd or the farmer or simply left alone, because in the case of ordinary stock it would not be able to carry a veterinary's fee?—In the district where I am there have been many of those cases attended by the veterinary surgeon.

9573. That must be in the case of high class or pedigree sheep?—No.

9574. Do you think there is much more room in the branch of agriculture with which you are more particularly connected for experimental work if it were supported by Government?—I think there is more room for it.

9575. You know yourself certain directions in which you could proceed if the staff and material and apparatus were provided?—Undoubtedly.

9576. One particular direction occurs to me, but I may be entirely ignorant, and that is in the direction of plant poisons. Do you often hear farmers complaining that their stock have died of mysterious diseases, and do they bring plants to you and say they are convinced that those plants are responsible for the death, and do you ascertain whether such plants are really poisonous or are not poisonous at all?—The only case of that kind that I have had in the last few years was the death of a number of lambs, and they were found to have died from tetanus. Cases of poisoning are very rare.

9577. That does not prevent farmers from believing that certain weeds that have been eaten by their stock are the cause of death?—It does not.

9578. In some parts of the country farmers believe that a certain weed, the Stinking May weed, which is found growing in pastures is certain death to lambs, and such pastures cannot be let off if that weed is found to be present in them, and any hay with that weed in it cannot be sold. I cannot find out whether Stinking May weed is an animal poison. I have looked in the books, and I cannot get any reliable information, and I ask you as a qualified surgeon whether you can give me any definite information on that point?—I cannot; I know nothing about it.

9579. Do not you think the Government might put enquiries on foot to settle positively and for all time to come whether that belief that is so general is well grounded or otherwise?—Most certainly. I should think that ought to be the work of the agricultural colleges.

9580. There are other weeds of the kind and there is not a book I have come across in which there is any information as to their poisonous qualities. I suppose you could not hazard the opinion whether stock that have died with *Cupressus Macrocarpa* in their stomachs have actually died through eating it, or whether their death has been the result of pure accident or other cause?—I could not express an opinion with regard to that without a thorough investigation.

9581. You think the Government ought to take in hand investigation and enquiry of that description?—Yes.

9582. (*By Lord Barnard.*) Any investigation carried on with the help of Government money I should have thought would more properly be done by the Royal Veterinary College?—Undoubtedly much work could be done in that direction by the Royal Veterinary College.

9583. Supposing the Board of Agriculture wanted information on any such points as these to which Professor Somerville has referred, if the Government were to give the necessary financial assistance do you think the enquiries and investigations could be carried out by the Royal Veterinary College?—Undoubtedly it could be done by the Royal Veterinary College, but it could also be done by the agricultural colleges.

9584. If conducted at the Royal Veterinary College veterinary surgeons, as well as the nation at large, would get the benefit of their investigations?—Yes. What I wished to point out was that many of these diseases are of a local character, and it might be an advantage to carry out certain experiments in those districts where they occur, and that might be done by the nearest agricultural college. I think farmers are more likely to apply to the agricultural college of the district for help in obscure outbreaks of disease than to the veterinary colleges, and I believe much good work could be done in veterinary research laboratories, such as my own at Wye, if sufficient funds were available for carrying on experiments. I have always been severely handicapped in my research for want of adequate funds.

Miss A. MILLER, called and examined.

9585. (*By Lord Barnard.*) You wish to give the Committee some information as to the facilities already afforded at Reading College for instruction in horticulture?—Yes.

9586. I think we have had some information on the point already so perhaps you will take that part briefly. What is the course in agriculture at Reading?—It is a two years' course.

9587. For men and women?—For men and women.

9588. I forget whether they are matriculated students of the College or not?—They are.

9589. All of them?—Yes.

9590. I take it you wish to give evidence particularly as to women?—Yes.

9591. What object have most of the women in view who take up that course?—I should say most of them wish to make their living by growing fruit and vegetables and flowers, and some of them wish to take up teaching afterwards.

9592. Some wish to teach, and some wish to make a living by cultivating gardens, keeping market gardens, and so on?—Yes.

9593. Do you, as a matter of fact, know anything of the after careers of those women?—Of a few of them.

9594. Can you give the Committee any instance of a woman who is now earning her living by market gardening?—Yes, I am earning my living myself by market gardening.

9595. Where is your market garden?—At Farnham. I have been there three years.

9596. Can you tell the Committee generally whether it is financially successful? I presume you had to put some capital into it?—Yes.

9597. Are you getting a sufficient return on your capital compared with what people get in other professions?—No, I should think not. I should think very few people would be willing to go on for the return we are getting, but I do not think that is necessarily because horticulture does not pay; but perhaps because we have not started it quite in the right way.

9598. You think it could be made to pay?—I do.

9599. Do you think the instruction is the cause of the comparative failure?—No, not at all, but in my case I was only able to take one year at Reading, and I think a second year would have been a very great help to me.

9600. You think two years' instruction is of value in enabling a woman to earn her living at horticulture?—Yes.

9601. Can you suggest any way in which that course could be modified or amended?—I should like to see a marketing course in connection with these colleges to be taken afterwards.

9602. That is in commercial methods?—Yes, packing and that sort of thing; preparing vegetables and fruit to be sent to market.

9603. You think more instruction should be given in grading and packing?—Yes, I should like to see a sort of post graduate course in that.

9604. I wonder whether you would agree with me that it is a very desirable way of obtaining information in almost every trade and profession that of getting it by actual practical work. Did you go into business on your own account straight from the College?—Yes.

9605. Do you not think if you had become a sort of working pupil first it would have been a better plan?—Yes, but it is very, very difficult for women to get into ordinary market gardens as working pupils, and I should like to see a department of that kind in connection with these colleges.

9606. I was thinking of my own profession, that of the Bar, where every practising barrister learns his profession by working at it under the eyes of a very skilled expert, and we have been told in this room that the ordinary farmer certainly learns his own profession best by working on a farm, and I should have thought that the best means of learning market gardening would have been to have actually worked in a market garden?—Certainly, but as I say, it is almost impossible for women to get into a market garden as working pupils, or at least it was so when I was learning.

9607. What is your remedy for that difficulty?—I think at a college where they market their produce as they do

at Reading they might draft out some of their students as apprentices. Of course I do not know whether that suggestion would be feasible or not.

9608. How do they conduct their packing there?—They have paid labourers and packers, I believe, who do a great deal of the work.

9609. I understand your suggestion to be that we should try and persuade—if you can persuade us to do so, that is—the Board of Agriculture that it is desirable that more technical knowledge in packing and grading for the smaller produce should be introduced into those colleges?—Yes; I think it would be most useful.

9610. You mention that special help should be given by Reading College both during training and after the completion of the same. What sort of help do you mean—financial help?—No. To take a particular instance, a great deal of help is given by the College in this way. They helped me, for example, to choose a place and I was allowed to consult them about the soil and so on, and as to a good locality to commence in.

9611. What is your complaint in that respect?—It is not a complaint, on the contrary, it is to show that the College has been most useful to me in that way, and to other students.

9612. Does the College give assistance in that way to its former students?—I have never known them refuse it when they have been asked.

9613. They advise students how to start for themselves?—Yes.

9614. Could that be extended in any way?—Of course it might be very difficult. It takes up time sending experts about the country, but they were very kind about it in my case.

9615. Are there any other points which you wish to touch on?—No, I do not think there are.

9616. You mention that there are one or two points in the training of students which in your opinion might be altered with advantage?—That was with regard to the marketing course and the apprenticeships which I have already referred to.

9617. You have given us your views as to that?—Yes.

9618. (*By Mr. Lamont.*) I should like to ask you, if it is not too inquisitorial, what particular branches of horticulture you have taken up?—Fruit and vegetables, and we combine that with poultry and flowers.

9619. Wall fruit and small fruit as well?—Yes, small fruit and apples and pears.

9620. What is your market—do you find a local market, or does most of your produce have to come to London?—No, it is local in Farnham and Aldershot and private customers; we are too small to send to London, we do not grow enough.

9621. Might I ask you what extent of ground you have?—Two acres only.

9622. You say that at Reading if all the packing were done by apprentices the produce would be spoilt to too great an extent, but do you not think that a certain proportion of apprentices might be added to the professional packers' department, so that some of the post graduate students could learn that very important part of the work without really injuring the sale of the College products?—Yes, I think that is possible, although of course they may do that now; it is nearly four years since I was there.

9623. Supposing one in three of the packers were apprenticed, the difficulty might be got over in that way, perhaps?—Yes.

9624. (*By Mr. Medd.*) How many of you are there engaged in the work?—Three.

9625. Do you employ any paid labour?—Yes, we have two boys.

9626. For rough work—hard work?—Yes.

9627. What wages do they get?—Six shillings a week each.

9628. With regard to the packing and grading, have you found yourself that you have suffered loss from your ignorance of it?—Yes.

9629. Have you ever visited Swanley?—No, I have not been there.

Miss A.
Miller.

19 June, 1907

Miss A.
Miller.

19 June, 1907

9630. I happen to be vice-chairman of their governing body ; we teach all our girls packing and grading as part of their regular course there, and I think we lose a considerable quantity of money in the process, but every girl gets trained efficiently, and I was going to suggest that it might be worth your while even now to go there and have a course of training in it ; it would mean a very small amount ?—Thank you, but I am afraid it would be impossible just at present.

9631. That is a matter, of course, for you. With regard to this apprenticeship system that you suggest, what would you propose that Reading should do in the way of apprenticeships—perhaps apprenticeships may be the wrong term ?—My idea was that certain students should be allowed to work in the garden, not exactly as students, but more in the way of apprentices.

9632. Half students and half apprentices ?—Yes ; to help with the practical work in the garden, having gone through their course of training.

9633. Did you find you had sufficient opportunity at Reading to learn all branches ?—Yes.

9634. Because they had not a large acreage of fruit garden when you were there ?—No, they had not, but still they had an orchard—they were planting it.

9635. The garden always seemed to me so very small for the number of teachers ; but you did get adequate instruction in every branch ?—I did. Of course you will understand in my own case I did not take the full course, but that was not their fault.

9636. I understand. The pursuit is one you would recommend to women who are not entirely dependent upon earning their livelihood ?—Yes.

9637. The effort and the anxiety of other occupations, with perhaps larger profits, do not counterbalance the small profit and the enjoyment of the open-air life and the interest that you take in horticulture ?—I think not.

9638. You are doubtful ?—Well, it depends so much on the individual.

9639. It depends upon the individual, of course, a great deal, but for many ladies I should think it is better than an industrial life. It is better, for instance, than typewriting and shorthand work. Do you know of any other fellow students of yours who are earning their livelihoods by gardening ?—Yes, I know one now who is working in Mr. Barr's nursery.

9640. As a paid gardener ?—Yes, doing special work—hybridising, I believe.

9641. Is she there permanently ?—I believe so.

9642. Do you know any who have gardens of their own who are doing market gardening ?—Not fellow students, except the one who is with us. Of course, we were a very small party when we started.

9643. You have not met with any who were at Studley or Swanley ?—No, we have not.

9644. We, of course, have many, and there are many ladies who are making a very good thing out of it, but they take pupils, and when they take pupils you cannot tell how far their profit and general income is derived from pupils and how far it is from the gardening ?—No.

9645. (*By Mr. Lamont.*) Do not you think it would be possible that what you will admit is a rather moderate success may be because your holding is so small a one relatively to the value of your house ?—Yes.

9646. Supposing you had four acres, you would not require to pay proportionately any more rent for the house ?—Quite so, but, I think, if you go further out into the country where the rents are lower, it would be more difficult to get the market and the prices.

9647. (*By Mr. Medd.*) Do you do any French gardening ?—No.

9648. You would make money by that. What do you grow, mainly ?—We grow small fruits and peas and beans and cauliflowers and carrots.

9649. Probably you cannot get beans early enough to command the early market prices ?—No, although we have a very early garden for an out-door garden.

9650. Yes, but probably you are not selling peas much before the end of June ?—Well, we are selling peas now.

9651. I think if you were to see one of these French gardens you would be very pleased. It is the newest form of gardening that has been introduced into England.—Thank you, very much.

9652. (*By Lord Barnard.*) What sort of accounts do

you keep. Do you keep merely a receipt and payment account, or do you attempt to keep a proper commercial account and balance-sheet ?—Yes, I attempt that.

9653. Were you taught that at Reading as part of your course ?—Yes.

9654. I should just like to test that on a question asked you by Mr. Lamont. Do you charge yourself with the amount of your rent ?—Yes, it is all covered ; the profit I make is after paying the rent of the house.

9655. In order to ascertain what the profit on the garden is you ought to keep the dwelling house apart altogether ?—In that case the profit would be considerably more.

9656. I think a great deal in agriculture depends upon the way in which accounts are kept. That is my own experience and it is also what we have heard here ?—That is so.

9657. Have you ever considered at all the question of co-operation ?—Only in a very small way.

9658. Have you ever approached the railway company, the London & South Western, I suppose ?—Yes, we belong to the Farmers' Co-operative Association at Farnham, and I believe that they approached the railway company. We have not, individually, of course.

9659. I believe it is the fact that most of the railway companies are quite prepared to entertain applications and to listen to representations by those interested in agriculture including horticulture. You have not actually gone to the railway company ?—No.

9660. To ascertain whether they can assist you in marketing your produce in any way ?—No, but, I believe, the Co-operative Association has approached the railway company, but it does not seem to have had any very satisfactory results.

9661. One word on the subject of packing. I suppose these expert packers at Reading must have begun somewhere ?—Certainly.

9662. Therefore, there must be opportunities for learning how to pack ?—There are, undoubtedly. Perhaps at Reading College they may teach packing now in their course ; they did not when I was there, and it was very much more difficult for a woman than for a man, when I was learning, to get that sort of instruction.

9663. You have told us that you did not think you could make a living, and I agree with you from the evidence you have given ?—I do not quite mean to say that I am not doing so at present, but I hope to do so.

9664. You have invested so many hundreds of pounds, and supposing instead of investing that money in this garden you had invested it in stocks of some kind you would have probably have got about the same revenue for it and had your time at your disposal into the bargain ?—I should not have thought so ; and I should not have had such an interesting life ; besides, I hope to increase the revenue.

9665. The point we have to consider, going back again to the terms of our reference, is whether we can report to the President of the Board of Agriculture that we are satisfied or not satisfied that women can make a living out of horticulture. What is your view with regard to that ?—I do really think that women can. The fault is, I think, that most women want to make too much out of it. They want to live as though they did not have to earn their own living, and I do not think they can do that.

9666. They would not be worse off than if they put their capital into something else, you think ?—I do not think they would.

9667. As we have been told, a great many of the women who are engaged in this business make part of their income by taking pupils ?—Yes.

9668. That may be all right from the point of view of the balance-sheet, but it would not be any use our giving that information to the Board of Agriculture, because it would prove nothing ?—No.

9669. (*By Mr. Medd.*) You do propose to develop your holding and extend your operations gradually ?—We do.

9670. You are now passing through an initial stage, and your experience has been such as to justify you in believing that ultimately you will make a good living from it ?—A living.

9671. You see just now you told Lord Barnard that you did not say you would not make a living, and now you rather qualify it to me again ?—I do not quite know what you mean by a good living. I rather wish to explain that

I do not think women can work a market garden and go out to tea-parties and to *matinées* and entertain their friends, and that sort of thing. I do not think there is enough in it for that, but if women care to go out into the country and live in a simple way it can be done.

9672. You would probably get more comfort from your occupation than a governess or an assistant in a shop or in a

trade or industrial occupation would get ; that is the idea ? —Yes.

9673. There is no discouragement in the idea that you cannot make a fortune out of it ; you cannot make a fortune out of heaps of things, and at any rate you have the means of living an interesting life and you are making, from your own evidence, profit ?—Yes.

Miss A.
Miller.

19 June, 1907

TWENTIETH DAY.

Thursday, 20th June, 1907.

PRESENT :

The LORD BARNARD (*in the Chair.*)

LORD MORETON.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Mr. A. E. BROOKS-HUNT (*Secretary.*)

Mr. H. L. FRENCH (*Assistant Secretary.*)

Sir JOHN MCFADYEAN, M.B., B.Sc., F.R.S.E., M.R.C.V.S., Principal of the Royal Veterinary College, called and examined.

9674. (*By Lord Barnard.*) I have in my hand a most interesting and, if I may say so, a most able account prepared by yourself of the history of the Royal Veterinary College, and of the subject of veterinary science generally. I delayed asking you to come in in order that I might consult the Committee for a few minutes on the subject generally ; and we are of opinion, on the whole, that we will not trouble you to go through the whole of what you have written here. Of course, Lord Moreton has the advantage of being well acquainted with the subject, and I and the other members of the Committee can read your account, so that we will not trouble you to go through the whole of it ; but just put one or two questions on your paper so as to bring out the essential points. You inform us that prior to 1791 veterinary science was not organised in this country at all ?—That is so.

9675. There were merely so-called farriers who administered the treatment ?—Yes. In fact, veterinary science anywhere may be said to date from the latter part of the 18th century.

9676. You inform us that the Odiham Society of Agriculture in Hampshire were the first to take it up, in 1790 ?—That is so : they really deserve the credit for having recognised the necessity of training men in veterinary science.

9677. Following on that, the Royal Veterinary College was by degrees evolved ?—Yes.

9678. It was well supported at the time by subscribers and so on ?—Yes, it was also supported by Government for a period of about twenty years, and it obtained an annual grant of £1,500, but that was withdrawn, I think, about the year 1815, and since that, until last year, the Veterinary College has obtained no State assistance whatever.

9679. At a very early date in the history you acquired your present site ?—Yes, it was acquired in 1792 or 1793.

9680. You have gone on developing that as means and opportunity offered ?—Yes.

9681. The College is now incorporated ?—Yes.

9682. You have power to grant a veterinary diploma ?—No. The Royal Veterinary College at the present time does not grant any diploma. For half a century after it was founded it was the only college in the kingdom concerned with veterinary education, and it almost necessarily had to take upon itself the duty of examining students and certifying that they were qualified to practise as veterinary surgeons. But about the year 1840, an agitation was got up among those who were practising as veterinary surgeons throughout the

kingdom and as a result, what is called the Royal College of Veterinary Surgeons obtained a Charter in 1844. The Royal College of Veterinary Surgeons is often confounded with the Royal Veterinary College. It is a distinct body. It is a corporate body made up of all the veterinary surgeons in the kingdom and the examination of those who intended to become veterinary surgeons was committed to them, and the Royal Veterinary College then gave up its own examinations. Since that it has devoted itself entirely to training.

9683. It takes no part in the examination of the students ?—No. It is one of the conditions of the Charter of the Royal College of Veterinary Surgeons that no teacher shall be allowed to take part in the examination of his own students.

9684. A diploma is granted by them ?—Yes, it is granted by the Royal College of Veterinary Surgeons.

9685. That was under an Act of 1881 ?—No, the Royal College of Veterinary Surgeons was incorporated in 1844, and empowered to hold examinations and grant diplomas, but for some years after that it was permissible for any other body to do so. The Royal Veterinary College, for instance, might have conducted an examination and issued certificates, but in 1881 what is called the Veterinary Surgeons Act was passed. That proceeds on lines very similar to the Medical Act, and it makes it an offence for anyone who does not hold the diploma of the Royal College of Veterinary Surgeons to call himself a veterinary surgeon.

9686. You have gradually extended the course of training ?—Yes. Originally it was intended—that is to say, at the end of last century—that veterinary students should undergo a three years' curriculum ; but it was found impossible, and it was not until 1876 that the curriculum was extended to three years, and for the last 14 years the curriculum has been a four years' one. The subjects of examination and of study have been proportionately increased.

9687. In your opinion, is the present examination a test of a very high qualification ?—No ; I could not say that it is a very high test. It must, from the circumstances, not be pitched too high. It represents the minimum qualification supposed to be necessary to entitle a man to engage in veterinary practice.

9688. Who does the examining now ?—The affairs of the Royal College of Veterinary Surgeons are managed by a Council elected by all the Members, and the Council appoints an Examining Board, there being one Examining Board for the whole of Great Britain and Ireland.

Sir J.
McFadyean.
20 June, 1907

Sir J.
McFadyean.
20 June, 1907

9689. You have entered into an arrangement with the University of London whereby a science degree specially designed for veterinary surgeons has been instituted?—Yes. To a certain extent the Governors of the College were anxious that a higher degree adapted to the requirements of veterinary students should be instituted, a degree which would, so to speak, confer a higher status on those who obtained it and which would therefore induce a proportion of the students to subject themselves to a longer training, and they approached the London University and laid these views before them, and the University has instituted a special degree for veterinary students.

9690. What is that degree called?—Bachelor of Science, and if the student proceeds far enough, he can become a Doctor of Science in veterinary science.

9691. In order to enable the College to train the students for this higher degree and qualification, you have found that it has been necessary to go to additional expense?—Yes, unfortunately in a sense we have, because I need hardly say the examinations conducted by the London University are of a higher grade and the training which is adequate to enable the ordinary veterinary student to get the diploma would not suffice at all to enable a man to take this higher degree and we had therefore to appoint one new teacher entirely; we had to ask others to devote a larger amount of their time to teaching and had to increase their salaries proportionately. We have had to make structural alterations in the buildings and spend a large sum of money in equipment: I mean as much as the governors could afford.

9692. Did that fund come from the corporate funds of the College?—Yes, but unfortunately the funds of the College have dwindled until they are on the point of disappearing.

9693. Do you get any grants from the Government?—We got a grant of £800 for the first time, last year.

9694. That is not an annual grant?—We hope it will be.

9695. What are your views, very shortly, with regard to what should be done as to the training of veterinary surgeons in the future?—My opinion is that if veterinary education in this country is to attain the level which it has already attained in most continental States, and to march on that level it will be absolutely necessary for the Government to lend some assistance to veterinary colleges. It is quite impossible, from the resources which they have hitherto had to rely upon, that they will be able to conduct veterinary education in the manner that it ought to be conducted.

9696. The parents of the class of men who become veterinary surgeons are not usually wealthy, are they?—No; they are usually the sons of people of limited means. I should think 25 or 30 per cent. of them are veterinary surgeons' sons, and sons of farmers are also among them.

9697. So that you cannot expect any additional income from that source?—No; it would be impossible, in my opinion, to increase the income of the Veterinary College by increasing the present fees, because if one were to attempt to do that, the immediate result probably would be that the number of students would be seriously cut down. Even at the present moment the numbers entering the profession is only just sufficient to keep the register at its present height. Last year, I believe about 50 men died off the register and 49 new men were added to it.

9698. You have considerable experience all over the country in connection with the profession, I have no doubt?—Yes.

9699. Do you consider there are more veterinary surgeons in the country than are required?—No; I do not. The total number of veterinary surgeons within the limits of the United Kingdom is about 3,000, and that includes those who compose the Army Veterinary Department and those who are occupying public offices. I do not think the number engaged in actual private practice is much in excess of 2,000.

9700. There are not many men who cannot get work, I presume?—No. In my opinion, an experienced man, provided he is a competent and sober man, has no difficulty.

9701. There is no risk in the falling off in the supply, is there?—Yes. I am afraid there is just a little for a few years. The number of students has fallen off considerably within the last two years.

9702. Any shortage would be a serious thing for stock owners and farmers?—It would. I feel rather concerned

about it myself from that point of view at the present moment.

9703. You are prepared to give us some general information as to what has been done in other countries, I think in Germany particularly, with regard to veterinary science?—I got some figures out just to show how the Governments of the principal continental countries have interested themselves in veterinary education. I think in almost the whole of the European States, veterinary education has received great assistance from the State. I have not got the figures as to France, but in France and Germany, veterinary education receives large endowments from the Government. In the German States, I find in Saxony, for instance, the annual grant amounted to 128,000 marks; Bavaria, 200,000 marks; Hanover, 73,000 marks; Prussia, 112,000 marks, and Wurtemberg, 91,000 marks. Then in all these States also, very large sums have been spent within recent years in new buildings and equipment, and the whole of the veterinary schools are really in an excellent state, both as regards extent and equipment. The most recent one, I believe, is in Hanover, which has just been built within a few years at a cost of £150,000; £90,000 was also spent on the veterinary college in Saxony; £57,000 on the one in Bavaria, and the one in Wurtemberg has also been rebuilt at a cost of £36,000.

9704. You know, of course, the terms of reference to this Committee?—Yes.

9705. We are to report to the President of the Board of Agriculture on the subject of scientific and technical instruction in agriculture. The question of veterinary education, to my mind, hardly comes within the scope of that reference; I do not know what your opinion is?—I should have thought that it did, because in my view the veterinary profession is almost entirely the servant of agriculture, and I think it is of the greatest interest and importance to agriculture that the veterinary profession of this country should be composed of men as thoroughly educated as possible in connection with the subject of their profession. I think that the country would reap great advantages from having better educated veterinary surgeons. Agriculture has already reaped great advantages from possessing such veterinary surgeons as it does now.

9706. You invite us to make some reference to the subject of the instruction of veterinary surgeons in our report?—Yes, I certainly should invite that; I am anxious to induce the members of the Committee to adopt the view that it is of great importance for agriculture that veterinary education should be assisted. It is not only of importance that the veterinary colleges should be able to turn out veterinary students well instructed in the facts known at the time, but it is also of immense importance that some amount of research should be constantly carried on in this country. It would be a discreditable thing to this country if there were no actual advance made in veterinary knowledge by the profession, and that we should have to subsist on the crumbs, so to speak, that fall from the table of the continental veterinary colleges.

9707. The Royal Agricultural Society have assisted you, have not they?—Yes, they have assisted us really liberally. For a long time—I cannot say how many years—they gave us an annual grant of £200, and then for a period of 15 years the grant was £500, but unfortunately, when their own finances became embarrassed, they felt compelled to reduce it to £200, and at present they give us an annual grant of £200.

9708. So that the premier agricultural society of the country recognises that your institution comes within the scope of agriculture?—It always has done that.

9709. (By Lord Moreton.) I am right in saying that the Royal Veterinary College, in return for the grant of money received from the Royal Agricultural Society, gave special facilities to its members, am I not?—Yes, that is so; and indeed the grant of £500 was originally given to assist towards founding the chair which I myself occupy, the Chair of Comparative Pathology and Bacteriology, and one condition of the continued grant is, that we shall investigate local outbreaks of disease when called upon, and in the case of an outbreak of any public interest, that we shall also do it without expense to the person who calls in our aid.

9710. (By Lord Barnard.) Of course, your opinion and assistance must be of very great value in connection with the Diseases of Animals Acts—invaluable, in fact?—Yes, I do not think it would be too much to say that

what we do in that connection is invaluable, but I think that we might do more than we do at present if our income were increased. My view is that, within the next few years, there will probably be an increased demand for veterinary surgeons in connection with public work in the control of contagious diseases, and in order that men should be able to engage in work of that sort, they would require some special training which we are hardly able to give them at present.

9711. Do some of your students go abroad, or do they mainly practise in this country?—Very few go abroad. A considerable proportion in the past have gone to the different Colonies, but that is practically stopped now, because most of the Colonies have veterinary colleges of their own, or intend to have them.

9712. You do not happen to know, I suppose, whether the Colonial Governments support these colleges in any way?—I believe they have not yet done so, but as President of the Royal Veterinary College, I have recently been in communication with the Premier of New Zealand, and he informed me that the Government of New Zealand has decided to found a veterinary college there.

9713. With regard to the army, do all military veterinary surgeons pass through the college?—They have to study at one of the veterinary colleges, and to pass the same examinations as those intending to go into civil veterinary practice.

9714. Is there an Army Veterinary School?—There is an Army Veterinary School, at which the young men who have just been admitted to the Department get a little special training in the duties of army veterinary surgeons.

9715. What other institutions are there in connection with veterinary work?—In Scotland there were until recently, actually three veterinary colleges. One of these has recently been moved to Liverpool, and there is one veterinary college also in Ireland.

9716. There are certainly public appointments open to veterinary surgeons now in connection with local corporations?—Not very many.

9717. A gentleman I dare say you know very well, Mr. Clement Stephenson, was the other day at a meeting of the committee of the College at Newcastle, with which I am associated, and was discussing this very question, and he informed us that he was veterinary officer to the City Corporation, or he had been at one time?—He was at one time.

9718. And in that capacity he had very important duties to perform in connection with the cattle market?—Yes, and other large towns, such as Birmingham, for instance, have veterinary surgeons who are the servants of the corporation. They are not allowed to engage in private practice. There are two at Birmingham, and in the same way there are veterinary surgeons in the service of the Corporations of Liverpool and Manchester.

9719. There is an increasing tendency to secure healthy food for the people, and that kind of thing, so that public officers of that kind are likely to be in increased demand?—I think they are bound to be.

9720. There will be a public necessity for them?—Yes.

9721. So that, from that point of view, it is very important that there should be a supply of that class of men?—Very important.

9722. In the Annual Report of the Board of Agriculture and Fisheries on the Distribution of Grants for Agricultural Education and Research, there is a column in the summary table at the end showing the sums expended on farriery and veterinary science by the various counties. I see that the total last year is just under £3,000. I should imagine—I do not know—that a considerable portion of that was for actual farriery work—practical work?—Yes.

9723. The Committee would very much like to have your opinion—put it as you like best—on the general question of training farmers in the elements of veterinary science?—My view is that it would be a very good thing if every farmer could be taught the elements of what may be called veterinary physiology and hygiene. It would be a great advantage to him to understand a little of the construction of his animals and the mode of working of the various organs during health. It would also be a great advantage if he had sufficient knowledge to enable him to roughly

diagnose what are called the scheduled contagious diseases, because the law lays on him the duty of reporting these diseases. But it is not my opinion that it is either necessary or advisable to teach the farmer or other layman anything whatever with regard to the treatment of animals.

9724. (By Mr. Latham.) How do you propose that the farmer should get that information?—That I am not prepared to say. I should think it would be an impossible task to give every farmer this education; necessarily, it would have to be given to him while he was young. I said it would be a good thing for him if it were possible, but I confess that I do not see that it is possible to do this until every intending farmer has been through a course of what might be called agricultural education, and I freely admit that the other subjects of his education are more important than even this.

9725. I so very much agree with your remarks that I should like to mention that we had Mr. Cave before us yesterday, who was connected with Wye College, and he showed us the sort of syllabus of instruction that he gives to the farmers generally, and to the young men in the college, and I thought it was almost impossible for him to stop at what he thought was right without going on to what you think is wrong?—I should not have any difficulty in drawing the line between veterinary hygiene and the practice of veterinary medicine and surgery. I believe it is very difficult for lecturers to draw the line, because farmers will insist, and it is a mistaken notion, on being provided with prescriptions—the medicines that are to be given for this or that disease. That I believe to be fundamentally wrong, as wrong as would be an attempt to try to diffuse among laymen the knowledge of law that would enable them to safely make their own wills—it is just the same—or that one should attempt to teach a farmer the elements of clock making in order that he might keep his own clock in order. The farmer, in my view, will be best served by placing at his command the services of highly educated veterinary surgeons, so that when his animals are ill he will be able to call in a veterinary surgeon. But, as I have said before, I think it would be a very desirable thing if he could be taught some anatomy and physiology, and a little about the signs of contagious diseases where early diagnosis is, of course, of vital importance. There are few diseases of cattle where early diagnosis is as important as it is popularly supposed to be, because, unfortunately, we have not any specific remedy against any diseases. Therefore, in my view, the idea of teaching the farmer first-aid is ridiculous, because it presupposes that the farmer is able to make a correct diagnosis, and that is a thing that only comes from scientific education and experience. If the ailment is of a simple character, it would not be necessary to administer any medicine at all, but if the animal is really ill I think the farmer should not begin to pour drugs into it.

9726. What I more particularly ask you is this—I may say I am a farmer myself—we have a great many of these contagious diseases that I believe the ordinary farmer finds it almost impossible to diagnose. Unfortunately, an animal very often dies, and possibly the farmer does not think very seriously of it, and has it sent away; but afterwards it is found that it has been suffering from glanders or some other serious thing, and he is prosecuted. I was pleased to hear that you were coming to give evidence to-day, because I wished to ask you if you could give us some idea how that sort of thing could be avoided by means of veterinary education?—I am quite satisfied it would be impossible to train a farmer to make a correct diagnosis, but as a matter of fact the law does not lay on the farmer the obligation to diagnose any of the scheduled diseases. His duty is in certain circumstances to suspect them and report. Take, for instance, the case of anthrax. An absolutely correct diagnosis of anthrax is by no means an easy thing and demands in most cases a microscopical examination by a man of considerable skill and experience. It is very easy for the farmer to discharge his duty under the Anthrax Order, because his duty is, whenever an animal dies suddenly and unexpectedly, and without obvious cause, to suspect anthrax, and in my view, what would be necessary to teach farmers in regard to anthrax would be that important fact that, if a horse is found dead or an ox is found dead, anthrax should be suspected by the farmer, and the police should be notified. In the same way with regard to glanders, there are certain elementary facts that might be taught to a farmer that probably would ensure his

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Sir J.
McFadyen.

20 June, 1907

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*Sir J.
McFadyean.*
20 June, 1907

not having in his possession a glandered horse for a considerable time without suspecting it.

9727. I am afraid the words "considerable time" are dangerous?—You could teach a farmer so much of the common symptoms of glanders, that whenever he saw these symptoms or anything like them, glanders would occur in his mind. I admit that the result of this would be that, in a good many cases, he would suspect cases that were not glanders at all, but that is a thing of no consequence; it is far better that he should report a considerable number of cases that were not glanders than that he should keep in his possession without reporting it an actual case of glanders.

9728. How would you get this education given to the ordinary agriculturist or the agricultural student?—As I said before, in the existing state of things, it does not appear to me to be possible to give this education to every farmer, but a great deal may be done, I think, by the diffusion of literature bearing on the subject.

9729. Would you feel that farm students should have a short course at your College?—No, we really would not undertake at the Royal Veterinary College to give to those who wanted to be farmers the sort of instruction that I have been advocating as good for them, because the whole of our resources have to be devoted to training, to the utmost of our ability, intending veterinary surgeons, and the sort of education that is fitted for the one is not fitted for the other.

9730. (*By Lord Moreton.*) We have heard of the good work the College has been doing both as regards the teaching of veterinary science and also, I may say, veterinary research. I want to ask you a straight question—perhaps you had best consider whether you wish your answer to be reported or not—is there, in your opinion, any danger of the College being obliged to reduce its efforts in that direction owing to the want of funds?—I am sorry to say there is imminent danger.

9731. Do you mind that being published?—Not at all. The Veterinary College must, like other bodies that are practically self-supporting, cut its coat according to its cloth. The governors have, as the only source of income, the fees which they get from the students and what they get from what we call the subscribers, and this grant—I do not know whether I ought to call it a small grant—of £800 which we have got from the Government, and when I say that the amount paid in salaries to the professors of the Royal Veterinary College runs to £5,000 annually, taking no account of what is spent in equipment and instruments and so on, it will be seen that £800 per annum is really small.

9732. I think I am right in asking you if it is not the fact that the teachers have had of late to be content with a considerable reduction in their salaries?—I regret to say that is true; the governors have been compelled to reduce the salaries of all the members of the staff.

9733. It comes to this, I take it, that supposing the Government saw fit to discontinue their grant, the College then would have to very seriously consider whether they would be able to continue or not?—They would have to go back to a condition of affairs that existed perhaps 20 years ago.

9734. (*By Mr. Medd.*) From what source do you get the grant of £800?—From the Treasury.

9735. Not from the Board of Agriculture?—I believe it was recommended through the Board of Agriculture; we should never have got it without the assistance of the Board of Agriculture.

9736. You have quoted the large grants that are payable abroad by continental Governments to veterinary institutions?—Yes.

9737. Can you tell me whether they are paid by the State through the Treasury, or through the Minister of Agriculture?—I believe they all come under the Minister of Agriculture's domain in Germany.

9738. I do not know Germany. I had an idea that both in Holland and in France they came directly through the Treasury as yours does?—I am not sure about France, but I should think that is quite possible with regard to one of the French schools, the largest one, because that is almost entirely a military veterinary school—I mean the one near Paris.

9739. Do you not think, admitting to the fullest extent the necessity for additional aid to veterinary science in England, that your better method would be to apply direct to the Treasury rather than to the Board of Agriculture?—The better method would be the one most

likely to succeed, and my impression is that we would be more likely to succeed if this Committee would recommend that money given to assist veterinary education would be at least partly spent in the interests of agriculture.

9740. You admit to-day that it was owing to recommendations from the Board of Agriculture that the Treasury made you the grant of £800?—I believe that our grant is classed with the grant to the colleges that are teaching agriculture.

9741. My only feeling is this, that since the Board of Agriculture has such a very small amount of money at its disposal, and elsewhere in other countries and here the State has directly assisted veterinary science as an object worthy of assistance in itself, it would be better both in your own interests, and in the interests of agricultural education if you came directly under the Treasury rather than under the Board of Agriculture. You require for your wants a very very large sum, do you not?—We could do with a large sum, but we would be thankful for a small one, I mean a comparatively small one. We are very thankful for what we have got, and I can honestly declare it is very inadequate for what we would like to do, and in a measure what we ought to do, but it would be a matter of indifference to us under what head the grant were put in the Government returns. As I said before, I feel satisfied that we should never have got this grant of £800 if it had not been for the Board of Agriculture.

9742. No, and very probably this Committee or the Board might recommend it, but it would ease the burden so far as pure education is concerned if the grant were payable to you direct by the Treasury rather than through a Department?—I should be quite content to have it through the Department, because the Board of Agriculture is very directly concerned in having the country provided with competent veterinary surgeons. It employs a large number itself, and an increasing number.

9743. I think everyone admits that it is most discreditable that veterinary science has hitherto been allowed to depend on private generosity. My only question was as to the source, and if you found you did receive it from the Treasury, would you not consider the possibility of making the Treasury itself the source for that grant?—As I say, we really should not care how it came, or how it were classed, if we got the assistance.

9744. (*By Lord Barnard.*) The medical profession do not obtain any assistance from the Government, do they?—Yes, the medical profession has obtained very large assistance from Government funds indirectly, owing to the circumstance that medical education has been very largely conducted through the universities. For instance, in Scotland medical education has been most extensively subsidised by the Government; nearly all medical education in Scotland is conducted in one or other of the universities.

9745. You think you ought to have at least as good treatment in the interests of agriculture—you ask that we should put it in that way?—Yes, I should like to put it in that way, that the only justification for the demand is that it would pay the country, and it would pay agriculture for the country to give something towards promoting and improving veterinary education, and that if assistance is not given it appears to be inevitable that it will actually retrogress.

9746. You are pretty well acquainted, I dare say, with the agricultural profession?—Yes.

9747. You know, as a matter of fact, that agriculturists are far from wealthy?—Yes.

9748. Therefore you cannot look to those engaged in agriculture to assist very largely?—No, we recognise that!

9749. The only way of assisting the profession is through the State?—That I believe.

9750. I have just been looking through this official report again, and I see in most cases the colleges describe their veterinary officials as lecturers in veterinary hygiene. I suppose you would distinctly prefer the teaching of agricultural students to be in the principles of veterinary hygiene?—Certainly, I should highly approve that, and the more they are taught veterinary hygiene and physiology and anatomy the better, but, as I said, that is probably subsidiary to other branches of agricultural education.

9751. Those subjects had better be taught by

veterinary surgeons, I suppose?—Yes, probably it would be impossible to get anyone else competent to teach it.

9752. With regard to farriery in the agricultural colleges, that would be probably taught by a working smith?—Yes, I class farriery on an entirely different plane, because farriery is a mere handicraft, and all that is required to be taught of the theory of farriery to a shoeing smith can be taught in a very short time.

9753. Does not the ultimate excellence and the efficiency of the shoeing smith's work come from a knowledge of veterinary science?—That is true so far as it is necessary to teach the intending farrier the anatomy of the horse's feet, and he had probably better be taught that by a veterinary surgeon, because again it would perhaps be difficult to find anyone else who was competent to teach that.

9754. Therefore the view of the veterinary profession is, that its services are essential to agriculture?—Yes.

Sir J.
McFadyean.
20 June, 1907

Mr. JAMES PETER, called and examined.

9755. (By Lord Barnard.) Will you tell us the position you hold so that we may appreciate your evidence and the reasons for your coming here to-day?—I understand you want to know what work we have been doing with regard to the agricultural education of young farmers at Berkeley.

9756. What is your position?—I am steward and land agent to Lord Fitzhardinge, at Berkeley Castle.

9757. You have interested yourself in the agricultural education of young farmers?—I have for many years. We have an agricultural society which is called the Berkeley Hunt Agricultural Society, and which has been in existence for some 17 years. We started in a very small way, and we have been keeping it going for a great many years. We have got a very good acting committee, and we have come to the conclusion that agricultural societies, to be any good at all, should exist for educative purposes as well as for the holding of annual shows of stock, and so forth. We have interested ourselves in agricultural education, both for the sons of farmers and for the agricultural labourers, in the way of giving prizes for the best cultivated gardens, and for specimens of fruit, and that sort of thing, at the annual show. We also give prizes for hedging and ditching and thatching, and also hold milking competitions. In addition, there are classes for farmers' daughters in cheese making and so forth, under the dairy schools of the County Council.

9758. You merely organise those, I suppose?—Yes, we organise those at Lord Fitzhardinge's farm.

9759a 9759. At the expense of the County Council?—The dairy classes are carried out by the instructress of the County Council. Lord Fitzhardinge supplies the use of the dairy, and the County Council send down their butter maker and their instructors, because we want a good many going on all at the same time. We have carried that out with great success. The students learn the methods of making different sorts of cheeses—Stilton, Wensleydale, and also Cheddar and Double Gloucester, and so forth—and butter making also, and we have had very good results indeed. After that we thought we must do something for the young farmer. It was suggested at one of our annual meetings that there had been nothing done for the young farmer, and one of the members of the committee said he thought the young farmers ought to have some prizes for hedging and ditching and thatching. I, as chairman of the committee, suggested that there ought to be something more advanced for the young farmer's education than just hedging and ditching, and so we formed ourselves into a sub-committee, and drew up a scheme for the examination of young farmers on agricultural matters generally, including competitions in practical work. Lord Fitzhardinge came forward liberally and offered a prize of £10, and our Society offered prizes of £5 and £2 10s. in addition. This is a sample of the schedule. (Handing document). It says: "For members, members' sons, or employees of a member, under the age of 25 years, and residing within the limits of the Berkeley Hunt, who shall:—(1) By an oral and written examination best satisfy an examiner as to their general knowledge of practical agriculture. (2) Most correctly estimate the relative values and weights of a number of cattle, sheep and pigs to be submitted to them, and pass their opinion as to the value and soundness of cart horses. (3) Thatch a rick in the best and most workmanlike manner on the farm where they reside. Note.—Three days' notice must be given to the Secretary before this work is commenced." Notice has to be given before they commence to do any of the thatching to the secretary, so that a member of the

committee may go and see the young farmer actually doing the work, and in order that he may not be helped by anybody who might be giving him a hand with the work. He must give that three days' notice, and one of the committee goes and sees that he does the work himself. Then he has to execute two perches of hedging and ditching in the most workmanlike manner. The time allowed for that is five hours. In addition to that there is a ploughing competition. Last year was the first competition, and it was very successful indeed. We had an expert down to show the young farmers' sons how to plough, but we found that the young farmers were better men than the expert was. Then there is another thing we want to encourage more than anything else, and that is the live stock of the country, which I look upon as the sheet-anchor of agriculture at the present day. We have a new class this season. This is the schedule for that: "For members, members' sons, or employees of a member, under the age of 25 years, and residing within the limits of the Berkeley Hunt, who shall:—Judge a number of cattle, and most correctly place them in order of merit. Give reasons for so doing in writing, on cards to be provided." The cards are provided at the show. We want to educate the young farmers to be experts in live stock and the market values of live stock. No country in the world produces better stock than we do, and the foreigner comes here from all over the world to replenish his stock from ours, and there is no question that the young farmer ought to be an expert in connection with stock and everything connected with agriculture. That is our ideal. Our chief aim is to give a practical acquaintance with the business of farming, and a general knowledge of applied science as to feeding-stuffs, and manures, and a practical acquaintance with the treatment and market values of stock. Those are the chief features we try to cultivate, and I think we have been very successful indeed. The young farmers have taken particular interest in it. The only weak part of it where we are very much handicapped with the young farmer is, in the rural districts, on the question of elementary education. They have not got facilities to continue their education after their elementary standards are passed at the age of 14. A lot of our farmers are small farmers, and there are a good many small tradesmen in the rural districts, and they are not in a financial position to send their children away to school, say, at Gloucester or Bristol, or wherever it may be situated, which would mean a cost of £20 a year in travelling. Small farmers cannot do that, and we find that the elementary education of their sons is at fault; and at these technical schools that we have in the winter we find they cannot grasp the syllabus of the technical instruction, such as the relation of chemistry to agriculture and so forth, but it is wonderful how after they have stuck to these classes for a time they get a smattering of knowledge. I will just show you one of the written examination papers which is put before these boys. (Handing document.) Those questions are put by the Professor of the Royal College at Cirencester, Professor Blundell. I may say he has been uncommonly good. These questions are pretty hard for a young man who has had no college education, and in fact who has had little other education than the education he has had at an elementary school up to 13 or 14 years of age. He goes through these examinations several times—he begins at 17 perhaps and works up sometimes till he takes a prize at 25. They have three hours to do that written examination in. They are put into a room; they know nothing about the questions they have to write upon; those questions are put before them, and they have three hours in which

Mr. J. Peter.

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Mr. J. Peter. to answer them. Then the examination papers are all put up together, and the next day or the day after, Professor Blundell, of Cirencester, who is the scientific examiner, goes through them. Then the students have to go through an oral examination. They are taken into a room, and the professor tests their knowledge as regards practical agriculture. He will have cakes and feeding-stuffs, and also all the different seeds and grass-seeds and grasses. He tests their knowledge on those subjects, and after they have done that they have to go before a practical examiner. There are a number of animals put before them on Lord Fitzhardinge's farm, a couple of fat beasts, a pen of sheep, and a pen of pigs, and they have to give their ideas as regards their value and weight, and what they consider the qualifications of a dairy cow are and should be, and also what they consider the weight and value of a fat beast is, and the same with regard to sheep and pigs. Further, they have to give their idea as regards the value and soundness of a cart horse. We have had these classes since about 1900—this is about the eighth year. When we started these classes we thought that these boys ought to have a chance of educating themselves in order to make them more able to pass these examinations. Then we applied to the County Council for their agricultural instructor to hold the evening classes in winter, from October to the end of March. Those classes have been particularly well attended. I may say the boys come from seven or eight miles round, and I have known some come as far as 14 miles on a winter's evening. We had a class of 30 young farmers last winter, and there was an average attendance of 20. You can understand, on the dark winter evenings, when health is not quite so good as it is in the summer, the attendance may not be perhaps just the same as it would be in the elementary school in the day time, because those young men have their ordinary work to do, and so forth, and I think that shows that the attendance is very satisfactory indeed. We have gained a grant, I think; I believe for an attendance of 20, the County Council gets a grant from the Board of Education towards the expenses. At the same time the great want in rural districts is, that we want the continuation of education in some way or other put on to our elementary schools. I do not think there is any education for a farmer's son, or a labourer, like what they can have at home in their own parish, if only they have a technical school for that purpose, and it seems to me, with regard to farmers and small farmers who pay their rates for elementary education, it is a particularly hard case when their boys come to 14 years of age that they have not means of educating their boys unless they send them away to Gloucester or Bristol—the nearest towns where higher education is given—which is very, very expensive. Agriculturists are much worse off than the artisans who live in the towns; they get no chance to higher educate themselves, and if there was a continuation school in the district, I believe farmers would be only too pleased to pay certain education fees for it for their sons. My idea is this, that our elementary education is wrong, or at fault altogether. Of course, it is all right as far as it goes—I am not quite sure that it is all right as far as it goes even, because the education is badly given, and not as it ought to be in rural districts. We have a good schoolmaster, but he is not allowed to teach as he thinks best for the rural district, because he gets an inspector who will come in and say, "Your system is all wrong, and you must alter it completely."

9760. Do you not think it would be a very dangerous thing if every elementary schoolmaster were allowed to do just as he pleased in the way of educating his pupils? There would be faddists among elementary schoolmasters, you know, just as there are amongst inspectors?—I do not think there is any better system than the old parochial school system that we had in Scotland, where they gave a sound foundation in reading, writing, and arithmetic, which is fundamental anyhow, as regards education, to start with. That is not the end of education, however, although it seems to me in our elementary system it is the end in rural districts. We want something further advanced than that at the present time, because the rural districts are not supplied with higher education unless they go further afield for it.

9761. You have addressed some lengthy remarks to us on this subject of higher education, but you have not clearly told us whether you mean ordinary secondary education or whether you mean technical education in the science and practice of agriculture?—I say our ordinary education in the rural districts is not far

enough for the boys to grasp the technical classes when they go to them.

9762. The farmers in your part of the district, I gather, are only small men?—Yes, about 200 acres, some of them 100 acres, 150 acres, and 200 acres.

9763. Most of them can only afford to send their sons to elementary schools?—Yes.

9764. Are you a member of the County Council?—I have been, but I am not now. I am a member of the agricultural committee of the County Council.

9765. May I remind you that throughout the country a very considerable effort is being made to provide secondary schools, available for every district where they do not already exist?—Yes, but they are not yet provided.

9766. You must be peculiarly unfortunate, from my knowledge of England, if you have no local grammar schools or secondary schools?—There is a grammar school at Wotton-under-Edge, but that is miles away, and the boys can scarcely get there.

9767. You would not suggest that the country should go to the expense of having a secondary school in every village?—I should say there ought to be a further advance, or the standard ought to be increased to a higher state of education than it is at the present time.

9768. (*By Lord Moreton.*) You will agree with me that the county of Gloucester is a somewhat difficult one as regards the geographical side of the question. It is very difficult, for instance, for a boy on the Hills to attend school in the Vale district, especially in winter?—It is.

9769. And equally difficult for a boy in the Vale to go up and attend school on the Hills?—Yes, impossible.

9770. (*By Lord Barnard.*) We have heard from many witnesses here that in many districts of England farmers do make a great effort to send their sons to secondary schools, and do so?—They do: that is quite right: but I say the distance is really too much for a great many of these small farmers.

9771. Would you agree with me that in cases like those you have mentioned it might be advisable for the County Council to assist the scholar, if he is a clever enough boy to derive any advantage from it, to go to a secondary school by the aid of a scholarship?—Yes, I have studied that question.

9772. Are there any scholarships in Gloucester?—Yes, there are scholarships which are given by the County Council.

9773. Are they insufficient in your county?—They are.

9774. Then it is a matter for the ratepayers of the county to take up and press upon the Council the necessity for giving more scholarships?—Yes; but I am afraid there is too much put upon the ratepayers already. We want provision to be made at our elementary schools so that a boy, if he has finished his elementary standards at the age of 14, could go on and take higher education in his own parish. There is no provision made for that in the rural districts.

9775. How do you suggest that you could carry that out without an additional burden on the ratepayer?—I would suggest that the pupils should pay a fee adequate for the expenses, and then they would be able to do it without having to go and pay railway fares, and so forth, to go to Gloucester and Bristol, which would cost their parents £20 a year in travelling, and if a man has several sons it is a tax that he ought not to have to bear, and it ought to be provided for him at his own home.

9776. I think we are rather wandering from the subject, although it is incidentally of importance. You know the object of our enquiry is as to the provision which is now being made for affording scientific and technical instruction in agriculture. I have not stopped you, because it is a very important thing to consider how far a lad is qualified to receive scientific and technical instruction. Therefore, the question of his elementary education is of importance, but I do not propose to pursue that subject further?—I can quite understand I may be transgressing a bit, but before the boys can grasp that technical instruction they want to be educated to a certain extent.

9777. (*By Mr. Medd.*) Might I put one question which might settle it? I think what you have in mind are supplementary courses at the existing elementary schools?—Yes.

9778. Or the formation of a higher elementary school?

Mr. J. Peter.
20 June, 1907

—You might call it supplementary. I could give you an instance at our old parochial schools in Scotland. I have known scores of boys go to work the whole summer and then attend the parochial school and take a course there in the winter.

9779. You would desire at Berkeley a supplementary course or a higher winter elementary school?—I would have a higher elementary school if it could be provided.

9780. The difference is in the duration of time?—That is it. What we have done at Berkeley is this. We have been trying to improve ourselves in the best way we possibly can, and to train the young farmers up to give them a good knowledge of practice and science as applied to agriculture.

9781. The fault does not rest with Gloucestershire. It rests with the Board of Education?—Quite so.

9782. (*By Lord Barnard.*) I think the inference which I have drawn, and that the other members of the Committee have drawn, from all this is, simply that the elementary education provided for the young farmer is defective?—That is entirely the sum and substance of it.

9783. I do not quite understand what this Berkeley Hunt Agricultural Society is? Do the members pay subscriptions?—Yes; you will see a list of the members here. (*Handing book.*) We give something like £700 in prizes every year.

9784. You have described the methods of examination of these boys both in theory and practice; but you have not told us anything, I think, as to how they are taught either the theory or the practice?—This is the syllabus? (*Handing same.*)

9785. Are the teachers provided by the County Council?—Yes.

9786. That is part of the instruction for which you rely upon the County Council?—Yes.

9787. The Society is only really an examining body?—It is really only an examining body, and it gives prizes. That is the syllabus for the winter evening schools. (*Handing same.*)

9788. Would you agree with me that a good deal of the practical work to which you have alluded, the practical knowledge of stock, for instance, is acquired better by experience than in any other way?—There is no doubt about that, and that is what we are anxious to supply, and give them that experience and test their knowledge on that.

9789. I do not think I understand you to suggest that this Committee should recommend that scientific and technical instruction in judging stock should ever take the place of the practical experience which is gained by the boy on his father's farm or on somebody else's farm?—No, he gains that on his father's farm, and he is put to the test when he comes to the competitions. I mean they would not take that interest in their father's stock if it were not for these prizes that we have instituted.

9790. You say your great object is to make the young man a really good practical farmer?—Yes, that is what I say—that education—and if that higher education were provided in our rural districts the boy could get his practical knowledge from his father and could do a certain amount of work before he went to school and after he returned from school.

9791. The object of your awards is to encourage men to turn out good practical farmers?—Certainly.

9792. I do not know whether your experience is the same as mine, but I venture to think from an acquaintance with farmers in no less than three counties, distant from each other, too, that as a rule the British farmers are undoubtedly good farmers and extraordinarily good practical men?—No doubt, but I think the more instruction they can get the better. I would make them more observant of everything connected with the farm, and make them more particular in everything connected with the stock and looking after the stock, and also with everything connected with agriculture.

9793. As to the scientific side of agriculture, although you deprecate it for the bulk of farmers, I do not understand that you suggest that it is not necessary at all?—No, I do think it is necessary.

9794. You would not propose, for instance, that all these colleges which are marked on that map there should be swept away as being a useless waste of public money?—I am afraid that a good deal of them is waste.

They do not serve the agriculturist. They are too far apart for agriculturists or for young farmers generally. Take the system they have in America. They get almost free the instruction there. I spent a day at Guelph College, and I was surprised at the work they do there. I asked the professor, "Have you followed up these boys to see what becomes of them?" and he said, "That is almost impossible, but it is astonishing the amount of good they do when they come back in the autumn session. It is like putting leaven into dough. It spreads into the whole country and does an enormous amount of good." I do not think the boys are any more intelligent in Canada than they are here, but at the same time they have all those advantages, and they go for a whole session and get that for nothing for the work they do. The facilities they have for seeing the scientific and practical work are very, very great.

9795. Have you visited any of these colleges in this country?—Not yet.

9796. Then it is hardly fair to compare a college that you have visited with one that you have not visited. Do you think it is possible that when you have made a closer investigation of our own colleges, say the Harper Adams College in Shropshire, that you might perhaps modify your views somewhat?—I am only speaking from what I have seen of the gentlemen who come from these colleges as instructors. They are not particularly good samples, and we are very badly off for instructors, even those who are appointed by the County Councils. When they have come to Berkeley some of the boys there have put questions to them which they have quite failed to answer. I take great interest in this class in the winter evenings, and I am often there, and you would be surprised at the questions that are put by the boys to the instructors that are supplied by the County Council, and the instructor is often quite unable to answer the questions they put to him. That is what we are short of in this country—good agricultural teachers.

9797. You will bear in mind that 20 years ago there was hardly any instruction of the kind at all in the country?—Yes, but things have very much altered since then.

9798. For the better?—As regards education it is for the better. Of course we are not going into the political part of the matter, but farming now to what it was 50 years ago is altogether quite different.

9799. Perhaps in the course of time by persons like yourself and others taking trouble we may evolve some better system?—I think you will acknowledge, seeing the depreciation there has been in agriculture, taking it altogether, that people have educated themselves to keep up with the times and have been able to struggle with the times much better than they were between 1879 and 1890. They have educated themselves on cheaper methods and they have adapted themselves to the times now, and agriculture is in a more prosperous position than it was 20 years ago.

9800. (*By Lord Moreton.*) I think it would add to the interest of your evidence if you would give the Committee some idea of the ground you cover, either in miles or in acres?—We go from Bristol to Tewkesbury. That is about 50 miles in length and about 12 miles in width.

9801. Looking at the list of your subscribers I see the bulk of them come from the Vale?—Yes.

9802. I suppose you take special care that the questions asked at your examinations should be those of a nature to bring out the knowledge of the candidate as regards local agriculture—there would be local colour given to the examination paper?—I do not exactly follow.

9803. A candidate for Berkeley, for instance, would not be asked a question dealing with a system of farming which was carried on in the North of England?—Certainly not.

9804. So that your system is chiefly in the improvement of local agriculture?—Yes.

9805. You rather limit it to the requirements of the county?—We do.

9806. I see one of your questions begins: "If you were farming a farm of 200 acres at Lady Day;" and another begins: "If you were taking a farm of 300 acres at Michaelmas?"—Yes.

9807. Would those two papers apply to boys both in the Hill and the Vale?—Yes, it would as regards cereals and getting information from valuers.

9808. Have you any limit as regards age?—They come about 16 or 17.

Mr. J. Peter.
20 June, 1907

9809. I suppose the ordinary age would be from 16 to about 20?—Yes. They want, of course, to get prizes and certificates, and many of them get near 20 or 22 before they get a prize. They have to study several years before they become first prize men.

9810. (By Mr. Latham.) I have very much enjoyed your general evidence, but are we to take it in this Committee that the farmers of the last generation were badly educated?—No, but they lived under different circumstances altogether to what they do now.

9811. Were not the circumstances of our forefathers very similar as regards education to what they are at the present day?—I doubt that, because they did not have the competition to contend with that they have at the present day.

9812. Will you just kindly say what that competition is?—Take this, for instance—the competition of the Colonies and other countries, which are just as near our markets as regards the rates as a great many of our own farmers are to the markets themselves.

9813. Why is it necessary that the State should take up this education for the farmers and farmers' sons, as you have described?—The State does equally much for the great centres of population, and it seems to me that agriculturists ought to be as highly educated men to work out their business as what they are in the large centres of population, and surely the better educated men are, both in practice and science, they are not so likely to be a failure as a man that has not got it. There is no doubt that there are a great many small farmers without that knowledge—men who have not had a college education—but I think men who are highly educated are more likely to succeed than those who have not had the facilities of education.

9814. With that I expect we all agree, but you made a remark just now that you thought the scientific centres were not of much value to the agriculturist?—I do not know that they are. Where they get so much science they would be rather deficient in practice.

9815. I thought that some of the best farmers of the day, some of our older farmers, our forefathers, were simple and entirely practical men, and what I want to know now is why they have not brought down in their generation from father to son the education that is necessary for the rising generation?—I look upon science not as practice, but as the handmaid of practice.

9816. Why should not the father teach the son instead of being obliged to go to the State for all this practical education?—So he does, and I say there is no better education for the farmer's son than what is instituted at home, and if he can do a certain amount of work which he can do before he goes to school, and after he leaves school at night, it would be an advantage. I am only speaking from practical experience of what I had to do myself.

9817. Most of us know you pretty well, and do you not think if it had not been for the great industry and exertions you have made in your own district that possibly all we have been talking about here to-day might never have existed?—Possibly that is so, but I think it is a matter, as good citizens, that we ought to do our utmost to improve our fellow men in any possible way we can, and to improve the industry in which we are interested. I may say the only pleasure I ever had in all my life has been in work, and that is what we like to teach our children, to love work, to take an interest in it, and if you only put it before them in that interesting sort of way, to love the agricultural industry and take notice of all the farm crops and the animals and so forth—if you give these boys that knowledge I am certain a great many of them would come to our classes. Their parents do not give them the encouragement that they ought to do, and we find when they do come they are far brighter and far more observant and much keener in the market as regards the value of stock and the live weight of them, and in every way. We have feeding experiments going on, and take them out and shew them the different rations and so forth, and there are the judging and valuing competitions every month. The boys judge them for themselves and then they see them weighed, so that when they go to a market they have some knowledge of what stock is worth.

9818. I very much agree with all this, but what I want to know is why you want to go to the State?—I am not going to State. What we are doing at Berkeley is for self-improvement, but if you can give us some help from the State it will be a great help to us.

9819. I do not think you can expect every man—you will not get it if you do expect it—to be similar to yourself in each district?—If you go to the Colonies and the States, and look at what the Governments are doing for agriculture there; they are bringing knowledge to bear on the young people, and they get into it at a much earlier stage of life than the farmers do in this country. They put everything before them. The right kind of corn to plant, and the seeds, and everything connected with agriculture. Everything is put before them. The farmers in this country have not got that advantage, and that is why I say we are at a disadvantage, and that the State ought to help us.

9820. Do you consider there is a general desire throughout the country—do not take your own district exactly—amongst agriculturists for this education?—I do, if you can only get anyone in any district to take the lead. If you cannot do that; if there is no desire on the part of anyone to take the lead, it is a failure, but if you get someone to take the lead, and take an interest in it, and talk to the agriculturists in the matter, you will see they will come into it fast enough, but without that there is no success whatever; you must keep on the whole time.

9821. We are obliged to come to the conclusion from your evidence that the general education of the farmers is very much neglected?—Yes, especially with the small farmers. That is the class we want to encourage, and to have more people living on the land. We want as many as we possibly can, and not to send them off into the towns.

9822. From the evidence you have given to the Chairman, although you do not wish so much scientific knowledge, I see you have a man from a scientific centre always to be your examiner?—Yes.

9823. Do you think that is better than a thoroughly practical outside examiner?—We have a practical examiner besides. The Professor is one of the Professors of the Cirencester College; the oral examination is practically a practical examination on practical questions—the different grasses, and seeds and so forth—so that they may be conversant with all the different plants, manures and feeding-stuffs, and their compositions. I think it is necessary for a farmer to be able to know their compositions.

9824. Does he set the papers, or does the practical man set the papers?—The Professor sets the papers.

9825. Do you give any prizes for the best-managed farms in your district?—No; but we have for the best-fenced farms; not for the best-managed farms. We have not got money enough to take that up.

9826. Would that be a thing you would recommend?—I think it would be a very good thing indeed; I should recommend it, if we had the money to do it.

9827. I see you say you have encouraged the better making of butter and cheese. How is that done?—In cheese-making an instructor and instructress are supplied by the County Council from money that is voted towards the agricultural side of the technical education question. They send the instructors down and we supply the dairy and everything connected with it.

9828. That is a local thing?—That is a local thing; but they have a dairy school at Gloucester connected with the County Council, and pupils go up there.

9829. That is not a travelling school?—No, but they have a travelling school at times that goes to different parts of the country where the facilities and accommodation are supplied.

9830. That is simply confined just to butter making, is it?—No, cheese-making as well.

9831. I am speaking of butter now. There is nothing about the preparation of cream before it is brought to the dairy, or the treatment of dairy products afterwards?—They buy cream for that purpose; they buy it according to the quantity the cream will produce after churning.

9832. That could be very much better started if it began with the milk?—Yes, that is where I find fault with the County Council. I say they ought to see the milk produced on the farm and deal with it from the very commencement, but our County Council and the Education Committee do not see it in that way.

9833. With regard to cheese-making, is that a stationary thing?—Yes.

9834. Always at one centre?—Yes at Gloucester,

unless they send out a class every now and again where they are asked to. But they have not done that lately. It is all at one centre at Gloucester, and they buy all their milk for the purpose.

9835. There is no knowledge imparted as to the value of certain land to produce a certain quality of cheese, or where there is anything faulty in the land with regard to the cheese production?—They have not done that, and I think that is a very important matter.

9836. If it could be done on a larger scale, and more widely done, it would be even better than the way in which you do it?—It would; I think it would be of great service.

9837. With regard to the scholarships that are offered by the County Councils, how do you make use of them?—They are given for boys who pass an examination; I think it has only been instituted for about a twelve-month. There is so much for agriculture and so much for artisans. They can choose their own colleges to go to. I think there are two scholarships for agriculture and so many for other professions.

9838. What colleges are generally chosen?—I think they can go to Wye College or to Basing or to Reading.

9839. With regard to the question of the schools that you went into so thoroughly, I should like you to tell me how you think it possible that secondary education attached to the elementary schools, at the public expense, could be done without creating a certain amount of feeling amongst the ratepayers?—I did not suggest at the public expense at all. I suggested that the farmers should pay fees according to the expense after the elementary standards were passed.

9840. Who was this education for?—For farmers' sons and tradesmen's sons in the rural districts.

9841. Not the labourers?—Certainly, the labourers, too—for all in the rural districts.

9842. Would you tie them down to any particular fees?—Certainly.

9843. What would be about the amount of the fees?—Of course I have not gone into the matter very carefully yet, it would depend on the number of pupils that would apply, and I have no doubt a great many would apply—farmers' sons especially—up to the time they were 15 years of age.

9844. Do you think the farmers would like to lose the services of their sons while they were attending these schools?—They would not lose their services, they would have them if they had that education in their own parish before the boy went to school, and after he returned.

9845. They must go at some time in the day to attend these classes?—Of course they would.

9846. I find in my own district that farmers, when they have got a son who is anything like 15 or 16 years of age feel that he should be employed on the farm, and they do not like the idea of giving him any longer education?—Yes, but our boys leave at 14 and they have no chance of any other education unless they go to these centres.

9847. Would not it be better to let them go on and get as much education in early life as they could get?—You do not think 16 is too old for a farmer's son to leave school?

9848. I do not think it too old, but how many of them are kept there as long?—That is the fault.

9849. That is the farmer's fault?—If they are small farmers they cannot afford to send their sons away at an expense of £20 a year in travelling to a town for higher education, so what are they to do?

9850. What should the higher education be?—If they go to a secondary school, such as Bristol or Gloucester, certainly they would be above the sixth or seventh standard in the elementary school, but from what I hear, after they leave the elementary parish school, and go to Gloucester and Bristol, they are generally put into a lower standard than what they have been in in their own parish school.

9851. I rather gather from the answers you gave to the Chairman and to Lord Moreton, that you do not want much science, and I cannot see exactly what these boys are to be taught after they leave the elementary schools in these higher elementary schools that you advocate?—After they leave the elementary school as it is now when they are in the sixth or seventh standard, they soon forget what they have learnt unless it is refreshed after they are 14 years of age, that is in what I call reading, writing, and arithmetic and composition, and they

ought to have certainly a little grammar or something of that sort, and they ought to know something about the countries of the world as regards geography, and if a boy leaves at the age of 14 and does not go to school again he has lost the great advantage of improving himself for the whole course of his life.

9852. You want the boys to go to a higher school, not a State school, but to be paid for by the parents?—If we could have a continuation side to a State school or an elementary school, it would avoid these boys going away from home to the grammar school in the large centres.

9853. Do you advocate agricultural sides to these schools?—Certainly.

9854. You think they can be taught at these ordinary schools agriculture better than they would if they went to some of these colleges?—I do, because they get such a lot of practical agriculture at home.

9855. Do you think they can teach them practical agriculture?—Yes; from what I saw in Canada it is practical agriculture they teach them, and science as well; and from what I have seen of our pupils, some of the students of the Society who have been examined in practical agriculture, and from their examination papers—I have seen their papers—they compare favourably with these boys who have been examined at the Royal Agricultural College at Cirencester.

9856. Do not you think if we could have some of these scholars allocated to such men as yourself they would be very much better educated in agriculture than they would be at these colleges?—I should not like to answer that question.

9857. That is just the question we want answered. Do not you think a practical man can teach farming better than an institution of any class?—There is no doubt, without practical knowledge, science is no good whatever. I look upon science as the handmaid of practice.

9858. After that you would agree they could have a little science?—I would. I should like it myself. The more science I have the more I like it, because I like to know the composition of things.

9859. (By Mr. Medd.) The work at Berkeley was organised quite privately, was it not?—Entirely.

9860. You had, of course, the consistent help of Lord Fitzhardinge?—Yes.

9861. He has always been interested in it?—Yes.

9862. Your object in coming here to-day is to show that by enterprise and perseverance there is no reason why each rural district in England should not have similar opportunities to yours?—Certainly.

9863. You are more interested in considering the requirements and the needs of the son of the small farmer and the labourer?—Certainly.

9864. That is what you are here for?—Yes.

9865. I dare say you have heard of, or perhaps you were at, a school developed under the Dick Bequest in Scotland?—No, never.

9866. I thought perhaps you had from what you have said. To make it perfectly clear: what you do need is an expansion of your existing elementary school to collect the children from the immediate neighbourhood?—That is right.

9867. You believe that the labourers and the farmers would be willing to pay a fee for the attendance at such a school?—That is my belief.

9868. Probably you are aware that the farmers in the North Riding, when applying for exactly such a school expressed their readiness to pay fees?—That is my opinion, that they would.

9869. As a matter of fact, they did in that case, and they were hindered by the Board of Education. Much has been said as to your criticism of these collegiate centres. I may say that in organisation and in work they are almost identical with Guelph, which you visited and liked, but your objection to them to-day is that they are not, and cannot from their constitution cater, for the son of the small farmer and the labourer?—That is my experience.

9870. They serve a different function?—They serve a different function.

9871. If you are to supply the needs of the small man, whether the small farmer or the labourer, you want a different type of organisation?—I think so.

Mr. J. Peter.

20 June, 1907

Mr. J. Peter.
20 June, 1907

9872. (*By Lord Barnard.*) You told Mr. Medd that you thought it would be an advantage if other districts had a similar organisation to what you have to carry on the same work as you do?—That is my opinion.

9873. Do you think that in every district in England you could get such a liberal list of subscribers as you have at Berkeley?—If you have the same area, I do not see why you should not.

9874. I should like to enlist your services as a supporter in the part of the country I am in, where I think the areas are as large as they are in most parts?—I think if the people in the district will only interest themselves in the matter there will not be any difficulty in it being taken up. Of course we have a pretty good district, and they are nearly all farmers who subscribe.

9875. There are an enormous number of subscriptions of £5?—They are vice-presidents. Of course we are a hunting district, and a great many subscribe £5.

9876. Do you agree with me that it would be almost impossible to get such a subscription list in most districts?—At any rate, these prizes and that sort of thing might be offered at not a very high cost; we do all these things in connection with our show.

9877. You have a show of considerable importance, according to the list I have been looking at; is it the only one in the district?—No, there are several.

9878. Would not it be a somewhat serious burden upon landowners if they had to support by subscriptions such an enormous number of local societies for doing this work?—It would come pretty hard on landowners, but still Lord Fitzhardinge—

9879. I am rather speaking generally. You are rather suggesting that these societies should be multiplied?—No, I do not say they should be multiplied. I think we have too many of them as it is now. I think they ought to be amalgamated, and that it is no use unless you use these agricultural societies for educational purposes. That is what we do, and that is why we have succeeded so well.

9880. Do you ever receive the leaflets of the Board of Agriculture?—Yes.

9881. Are you a Correspondent of the Board of Agriculture?—I was asked to take it on, but I was not able to do so. I have not seen any reports of these correspondents, and do not know what has become of them.

9882. (*By Lord Moreton.*) Do you happen to know who the Correspondents are in your district?—I know one, but I do not think there is one for Berkeley. I do not see the use there is in it. I hear there is a new leaflet issued by the Board of Agriculture on the American gooseberry blight, which I think will prove most valuable.

9883. (*By Lord Barnard.*) How do you get the leaflets?—From the Board of Agriculture, sent to the Secretary of our Society.

9884. Do you ever communicate with the Board of Agriculture, or give them information which would be of national value to farmers?—I cannot say that I have.

9885. Do not you think it would be of advantage if leading men all over the country were brought more into touch with the collegiate centres, so that knowledge could be collated, and districts should not be locked up in water-tight compartments, as it were, with a sort of idea—"Never mind what is done in the next parish, we will look after ourselves"?—I should think the correspondence would be so voluminous that it would never be looked at—I mean, it would never reach the farmer.

9886. I am afraid you have misunderstood me. My suggestion was that the correspondence should go to the Board of Agriculture?—Then I quite misunderstood your question.

9887. And that they should adopt such methods as they thought proper for disseminating the information as they do the leaflets. I do not suppose you would suggest that the leaflets are useless?—Certainly not, they give a good deal of information, and the new information that has been issued lately as regards the American gooseberry blight, will prove very valuable. I have asked our horticultural expert about the blight, but he says he has never come across it.

9888. (*By Lord Moreton.*) Is not the very object of those leaflets to warn people what to look out for?—Yes.

9889. I thought that was the most useful leaflet the Board of Agriculture have issued for a very long time in warning people to look out for it?—We do not know what it is. I was asking the expert, and he says that he has made every enquiry, but he has never been able to discover it.

The Rev. JOHN B. M'CLELLAN, M.A., called and examined.

Rev. J. B.
M'Clellan

9890. (*By Lord Barnard.*) You are Principal of the Royal Agricultural College, Cirencester?—Yes.

9891. You have held that appointment since when?—Since 1880.

9892. You gave evidence before the Departmental Committee on Agricultural and Dairy Schools in 1888?—Yes.

9893. Would you like to refer this Committee to that evidence—have you looked at it at all lately?—No, I have not; I do not think I should care to do that, unless you wish it.

9894. I mean as to how far we could take it as holding good at the present day?—I can give you later and fuller evidence if you wish it.

9895. Very well. In what year was the College founded?—I may state, the first project for the College was in 1842, arising out of a movement set on foot by the Farmers' Club of Fairford and Cirencester. It was taken up afterwards more elaborately in 1844 by a meeting of subscribers at Cirencester, and a committee was then formed and authorised to apply for a charter of incorporation. What is very important, if I may say so, is that in the same year at the Royal Agricultural Society's meeting at Southampton, the scheme was expounded to the Royal Agricultural Society, and was warmly taken up by them, being advocated there by the Duke of Richmond and Gordon, by Prof. Buckland, and others, who were illustrious for their scientific attainments and exalted rank. In 1845 a deed of settlement was obtained and a Royal Charter of incorporation.

9896. What is the deed of settlement?—That is an indenture for settling the conditions of association.

9897. Who was that obtained from?—It was a deed executed by certain named parties for the purpose of establishing the College. (*Handing in copy.*)

9898. Certain money was raised by shares?—Yes; the sum of £24,000 was authorised, but of this only £20,600 was raised.

9899. That was subscribed by private individuals?—Yes.

9900. And a Royal Charter was obtained?—A Royal Charter was obtained in the same year. I should like to mention that under the deed of settlement interest was allowed at 4 per cent. on the shares, but, as a matter of fact, no interest was ever paid. From the first, although it might be called in one sense, I suppose, a private enterprise for a public object, it was really more in the nature of a public enterprise, and I may mention that among the first governors there were no less than 16 peers of the realm. The first shares were taken by his late Royal Highness the Prince Consort, and are at this moment held by H.M. King Edward, by transfer from the late Queen Victoria.

9901. I understand from you that it is not a private venture for profit?—No, certainly not; it has never been that.

9902. I do not know whether you are aware of the state of the law which allows certain institutions which are legally limited liability companies to be registered without the use of the word "limited," on the pledge that they make no private profit. Does this institution come under that clause of the Act?—I should say not; it has not been registered at all.

9903. Is it a limited liability company under the Companies Act?—No, I think not; that Act was later.

9904. What is the legal status?—Simply a corporation incorporated by Royal Charter. The College has never been called a limited liability company.

9905. Then it is not a limited liability company?—I should say not.

9906. (*By Lord Moreton.*) Is the liability limited?—Subject to legal opinion, I should say yes.

9907. (*By Lord Barnard.*) If you could put in a copy of this charter, of which you have spoken, it would settle the whole question?—Yes, I have it and other documents here. (*Handing documents.*)

9908. Perhaps you will kindly leave those with the Secretary?—Certainly.

9909. You use the expression "Debenture bonds" in your *precis*?—To explain this it is convenient to state that in 1848 liabilities had been incurred to the extent of £22,000 and odd on the buildings, and of £7,700 sunk on the farm; that gave, roughly, a liability of £30,000. The consequence was that in 1849 the first supplemental charter was applied for, and obtained, under which £30,000 was raised during 10 years by a mortgage under certain guarantees for 10 years.

9910. I really think, for our present purpose, it is not necessary to go very deeply into this question of the legal status. The origin of the College, perhaps, is not so necessary?—I was going on to say that, when the mortgage was called in, a further supplemental charter was obtained in 1870, under which the debenture bonds of £30,000 were raised to meet the said liability.

9911. Perhaps you would tell us about these debenture bonds?—£30,000 was raised under that charter in debenture bonds of £100 each, to bear interest at 4 per cent., not more, and a new committee of management was formed at that time, composed of six representatives of the bond holders and four representatives of the old shareholders. That is the position at the present time; but, if I may add, £11,600 worth of the bonds have been paid off out of income and £6,400 have been surrendered.

9912. In other words, those have been given to the College?—Yes, and at present, therefore, there are only outstanding £12,000 debentures.

9913. Will you tell us what the original curriculum was?—The original curriculum as given in the Bye-laws and Regulations was as follows:—Chemistry, geology, natural history, botany, veterinary art, accounts, mathematics, natural philosophy, and practical engineering.

9914. You subsequently developed that?—We subsequently developed that. I can give you the dates of the various developments.

9914A. I do not think we need go through the dates. We want to know very briefly how you extended your sphere of operations?—During my predecessor's time there was, as far as I can trace any record, some progress made with a veterinary hospital. In my own time, since 1881, estate management has been added, economic entomology has been added, with a laboratory, and in 1885 a dairy with all its equipment, bacteriology in 1901, poultry in 1903, and then specially, and most important of all, the development of forestry came in 1903; Lord Bathurst offering a portion of his park for a forest garden, for which the *Forest Garden Guide* has lately been drawn up by Professor F. C. McClellan, and is in your hands. I may mention in regard to that, that in 1885 Colonel Pearson, who was the head of the Forestry Department in India, when he visited Cirencester said it was most important that a chair of forestry should be instituted at Cirencester because of its many advantages.

9915. You have been good enough to give us a prospectus, and I suppose that will practically inform the Committee of the work that has been done up to the present day and the curriculum and the subjects taught?—Yes, and also as to the various buildings and equipments.

9916. Are all your students resident, or are some non-resident?—Some are resident in the College, who are called in-students, and some are resident in the town, out of the College; they are called out-students.

9917. For how many students have you accommodation in the College?—We have accommodation for about 65 in-students, and as to out-students, I dare say we could take 40.

9918. What control have you over the out-students? Do they go where they like, or do you provide them with lodgings?—They reside in licensed lodgings, practically

the same as at Oxford and Cambridge, and are under particular regulations.

9919. Is there any difference in the cost between the in-students and the out-students?—As far as the payments to the College are concerned, the in-students, if they have no private rooms, pay £135 a year. That includes instruction, board and lodging. The out-students pay for their instruction alone—£75 a year.

9920. The number of students you have at present will be of interest?—At the end of 1906 there were 70. I have furnished the Committee with a schedule of the numbers from 1879 to the present date.

9921. Yes. You generally have, I see, about 70?—Yes. But the number increased every year from 1880 until we obtained the record number of 106 in 1885. From that time they have declined; no doubt owing to the competition of the State-aided colleges.

9922. The decline is still continuing?—The decline is still continuing.

9923. You seem to have got a slight increase of out-students?—Yes, practically.

9924. Are you acquainted with the number of students at all at the other collegiate centres?—No, except at Wye; but I should add that the numbers this term show a further decline, so that if I am allowed to speak later and make a few suggestions, I should like to call attention to the precarious position in which the College is now placed.

9925. Have you a limit of age at which the students should come to the College?—17.

9926. Not under 17?—Not under 17.

9927. Have you any limit at the other end?—No, we have had one out-student as old as 65.

9928. What is the usual age?—The usual age for inside students is 18, and for outside students about 21 to 26.

9929. Where have these students usually been?—At the large public schools, and the out-students, several of them, from the University after having taken their degrees.

9930. Do they come straight from schools, or have any of these students been in other professions first?—Some of the out-students have been at the bar, medicine, holy orders, and various professions. Some have been in the army and some have been in the navy.

9931. What class of men are they principally taken from?—From the landed gentry, the learned professions, the army and navy, commercial men, and so forth.

9932. The upper classes rather?—Yes.

9933. In fact, they must be, on account of the fee charged?—That is so. We have some occasionally, and have had some occasionally, from the wealthier farmers' families.

9934. What is the course; how long do you calculate a lad ought to stay at the College?—To complete the teaching course, two years; and to complete the examination course, two years and a third, or two years and two-thirds.

9935. What do you call the examination course?—After the general teaching is completed—the students who are going in for the diploma revise their work and prepare for their final examination.

9936. You have not told us what the diplomas are, or whether the College awards a diploma?—Under the Charter it is authorised to grant diplomas.

9937. The students who wish to go in for the diploma have to go through an examination?—A special examination, conducted mainly by external examiners.

9938. I suppose you keep in touch with your old students—you have an old students' club?—Yes, we have an old students' club, numbering about 200 members.

9939. They do not all join it if that is the membership?—No, they do not all join it.

9940. Have you any other means of keeping in touch with your old students?—Only the athletic matches, correspondence, and also the *Students' Gazette*. Articles are contributed from different parts of the world by old students to the *Students' Gazette*.

9941. Are you able to give the Committee any information as to what these students do after they

*Rev. J. B.
McClellan.*

20 June, 1907

Rev. J. B.
McClellan.

20 June, 1907

leave the College; what positions in life do they take up?—I can give you some particulars.

9942. Not of individuals?—No. I will not mention individuals. I do not know whether you want the number of students we have had.

9943. No, a general indication of what is the future career of the men you have turned out at the College?—A large number of them have become estate agents; some have immediately taken farms and done exceedingly well; a number have become heads of colleges and directors of agriculture in various parts of the world—I think I might mention one by name now, Mollison, head of the Agricultural Department in India. Some, I am happy to say, have become connected with the Board of Agriculture, and one you have close to you, a very distinguished old student. Another one has been private secretary to two Presidents of the Board of Agriculture. He is now Secretary of the Surveyors' Institution. Some have become principals of colleges in Australia, in New Zealand, in the Cape of Good Hope, in the Mauritius, and in India five or six of them, and others have held distinguished positions, public and private, as in the Soudan and in different parts of the world.

9944. Are any of them distinguished at either of these places that you see marked in red on that map?—Druce was at Holmes Chapel, Thonger was at Hollesley, and Muir was at Leeds.

9945. Are your students drawn from all parts of the British Empire, or are they local men?—From all parts of the British Isles and all parts of the world: we have had numbers of natives sent by the Indian Governments, and also several of the Indian Civil Servants, as Ozanne, Steadman, Allen, and Muir Mackenzie, who is a distinguished Civil Servant in India at the present time.

9946. I have not asked you about your buildings, because they are fully described in your book here. I take it it is all freehold property belonging to the College?—No, it is held under Lord Bathurst. I can give you the particulars as to the leases, if you like.

9947. What the Committee ought to know is what are the terms of your holding. Is it under a lease?—Yes.

9948. Do you know the date of that lease?—The original lease was granted in 1848, to date as from 1845.

9949. For how many years?—For 99 years for the College and 47 years for the farm.

9950. It must have been renewed since then?—The tenancy, yes, but not the lease.

9951. For what period?—The tenancy is now an annual one.

9952. I dare say the Committee may assume that, as Lord Bathurst was good enough to help you, the conditions of the lease are not onerous?—No, not at all.

9953. Is it a substantial rent or a nominal rent that you pay?—Our present rent is £220 a year, that is for the portion held by the College. I ought to explain that in 1865 the lease of the farm was surrendered to Lord Bathurst, but under covenants that the College should have the perfect right as before of entry for the practical instruction. That is explained in the prospectus.

9954. The College have a covenant from Lord Bathurst not to let the farm without a right of entry for the College students?—Yes; not to let, except subject to those conditions of the right of the use of the farm by the College for practical instruction.

9955. What is the size of the farm?—450 acres, partly arable, partly pasture.

9956. About half-and-half is it?—The pasture is exactly 202 acres.

9957. What rent is paid for the farm?—The tenant pays £450.

9958. Do you have anything to pay for the use of the farm?—Yes, we pay a capitation fee to the tenant of the farm of £3 a year for every student.

9959. How frequently does each student go on to the farm?—Every student has a class on the farm with a Professor once a week, sometimes twice; independently of his own private work.

9960. How long is he there each time?—An hour with the Professor.

9961. (By Lord Moreton.) Apart from the classes is there anything to prevent students going on the farm by themselves?—No, it is part of their right to go

on the farm and observe and take part in any operation for which they may be qualified at any time of the day, and on any day of the week, and my instruction to them also is that they are expected to occupy a part of their leisure hours on the farm. I am bound to say a great number of them do not do it, but they are exhorted to do it, and to take part in the manual labour and processes which go on, as e.g., in sheep shearing, in ploughing, in scythe mowing, root and hay harvesting, and in all the other operations, but a great number of them do object to take any part in manual labour.

9962. (By Lord Barnard.) Does that arise from a mere disinclination to work, or from a feeling that it is derogatory?—I think partly because they are of opinion that manual labour will not be of very much use to them, and partly because they are rather disposed to occupy their time in recreation after their class work.

9963. (By Lord Moreton.) We may take it, apart from the scientific instruction imparted by the College professors, that the students have every opportunity of seeing the farm operations and taking a practical part in them?—Certainly.

9964. And prizes are given for it?—Yes.

9965. You lay stress on the word "practical"?—Yes.

9966. (By Mr. Medd.) Some of the students largely take advantage of those facilities?—They do.

9967. You retain a certain portion of the farm in your own hands?—Yes, about 40 acres.

9968. So that they are not entirely cut off from the practical side?—No, not even so; but the 450 acres of the farm is the chief field for the practical side of the out-door instruction.

9969. (By Lord Barnard.) Is the 40 acres you retain partly pasture and partly arable?—It is partly pasture and partly arable; there are only six acres arable, and the rest is pasture in connection with the dairy.

9970. Where exactly is the College situated—is it in the town?—It is about a mile and a half from the town.

9971. Is Cirencester a market town?—It is a market town.

9972. In the centre of a large district?—Yes, a very important district; it has a very important corn market and cattle market, and it has also a Chamber of Agriculture.

9973. Do your students attend the markets?—Yes, very regularly, and they are, by courtesy, admitted free to the Chamber of Agriculture.

9974. (By Lord Moreton.) It is one of the most important markets in the county of Gloucester, is it not?—It is, and the students attend it very regularly.

9975. (By Mr. Latham.) With regard to this practical agriculture, I think I am fair in asking you the question whether it would not be better if they would take a little more interest in the farm?—I think so, too; but I will tell you a story, if it is not taking up the time too much, on that subject, with regard to an Indian student who went down to the veterinary class. He was asked to do something to a horse and its shoes, and he said, "I have not come 10,000 miles to take part in the blacking of the back boots of a horse." I think that is the feeling of many of them. They are taught the use and the nature of every operation and of every machine, and when it comes to the final examination for the diploma, they are examined by external examiners in every part of that work, taken on to the farm and through every operation, both in the dairy and in the farm, and they cannot get their diploma unless they have successfully passed that examination. But I thoroughly agree with you, and I have often urged it, that they should take more interest in the manual work than many of them do.

9976. (By Lord Barnard.) Do you go in for poultry at all?—Yes; that was one of the developments which I inaugurated in 1903.

9977. Have you a poultry teacher?—Yes, a visiting teacher, one of the Browns, of Theale Farm, Reading; and there is an excellent model poultry farm in the town, run by one of our old students, where our practical demonstrations take place.

9978. Then, as to dairy work, perhaps you will tell the Committee something about that?—The dairy was established in 1885, with dairy-manager's house, steading for cows, and piggeries. It is extremely well equipped for every operation of dairy work, natural and mechanical

cream raising, butter making, and cheese making in all its branches.

9979. Does every student go through a course of dairy work?—Every student, yes.

9980. You mentioned at the commencement of your evidence a veterinary hospital?—I am glad you have mentioned the subject. The veterinary hospital goes on still, and the veterinary instructor takes his pupils there every day, one class or another, and we have animals brought for post-mortem examinations every term, as well as occasionally live patients for treatment.

9981. The students have a somewhat extended instruction in veterinary science?—Yes. May I mention that the late Sir George Brown, who was head of the Veterinary College until he died, was our veterinary examiner for the diploma, and he once reported to me, "Your students have not only done extremely well, but have passed a better examination than any of the students this year at the Royal Veterinary College."

9982. (*By Mr. Latham.*) Has there been any feeling on the part of the veterinary profession that you have gone a little further than you ought to have gone in your veterinary instruction?—Only on one occasion, when we put an advertisement in the local paper to receive patients for the hospital.

9983. (*By Lord Barnard.*) Will you tell us whether you have any special qualifications in agricultural subjects, or whether you are a pure science man yourself?—I have no special qualifications in agriculture myself; that and the various other subjects are taken by the different experts.

9984. What is your own special line?—My own special line, as far as the present College is concerned, is mathematics and physics.

9985. Then you have a professor of agriculture and dairy farming?—Yes.

9986. Is he a resident professor?—He is resident in the town.

9987. In addition to that, there is a dairy manager and demonstrator?—Yes, resident on the premises.

9988. Then you have a professor of estate management and forestry?—Yes.

9989. To go back again for one moment to the professor of agriculture and dairy farming, how does he acquire the title of professor?—The professors have their titles under the Charter; they have been called professors from the beginning.

9990. (*By Mr. Latham.*) What has Mr. Blundell done to gain the title of professor?—He was selected from various candidates when the post was vacant. He is an experienced practical farmer, and on more than one occasion has been appointed by the Royal Agricultural Society to examine for its diploma. You had one of our late professors here yesterday, Mr. McCracken; Professor Blundell succeeded him, as Mr. McCracken succeeded Mr. Robert Wallace, now Professor at Edinburgh University.

9991. (*By Lord Barnard.*) Then you have a professor of chemistry with an assistant; one in land surveying; one in book-keeping; one in physics and applied mechanics; one in botany, geology and zoology; one in veterinary surgery and bacteriology; a lecturer in poultry farming, and a professor in drawing?—Yes.

9992. Is your staff sufficient?—It is sufficient for our present work, but not sufficient if we are to do what we ought to do outside; that of course is a question of finance.

9993. You do some experimental work, do you?—We do and have done.

9994. For the use of your own students?—For the use of our own students, but the records especially referring to the manurial experiments on grasses, of which you have a return before you, are published in the *Students' Gazette*, and are circulated by that means throughout the country.

9995. You are not officially in touch with the Board of Agriculture at all, are you?—Not at all. I am sorry to say we are not.

9996. You do not often receive the Board of Agriculture leaflets?—Yes we do, and we receive the *Board of Agriculture Journal*, but that is by courtesy of the Board.

9997. Do you ever give information to the Board or ever correspond with any department of the Board?—Our Professor of Agriculture was invited to be one of the

Correspondents, but whether he has done much in that way I cannot say.

9998. You have 40 acres of land in your own hands. I suppose that is where you have your experimental plots?—Yes.

9999. They take the nature of experiments with different manures?—Yes, we have 20 half-acre plots for the grasses; they have been carried on since 1886. We have also had root and corn experiments.

10000. Do the students carry out any analysis of soils?—Yes, in the chemical laboratory, all students must do so for their diploma, and also even if they are not going in for the diploma, if taking the subject of chemistry.

10001. Part of the 40 acres is developed as a botanical garden?—Yes, 1½ acres.

10002. Part is devoted to forestry?—Yes, a small portion of our present grounds; but our chief forestry nursery is on another piece of ground hired specially for the purpose, and the forest garden is given by Lord Bathurst, in his own park.

10003. You plant the forest garden?—Yes, and the nursery we use partly for experiment, root pruning, and so forth.

10004. Are accurate measurements recorded of the growth of trees?—Yes, most accurate. Of course, the work has only been begun three years. As soon as the Report of the Departmental Committee on Forestry appeared, the College was the first to respond, and appointed a Professor of Forestry for the first time: Lord Bathurst at once gave up a portion of his park for the forest garden, and the Professor instituted and carried out and planted the whole of that garden, as you now see it portrayed in his book, with the measurements.

10005. One of the most important points with regard to forestry is to ascertain the rate of development of trees, measurements, and so on?—Yes.

10006. (*By Mr. Medd.*) Is it not the fact that the proximity of Cirencester to Oxford was one of the main reasons why the school of forestry was established at Oxford rather than at Cambridge?—I believe so.

10007. That appears in the evidence given by Dr. Schlich before the Departmental Committee on Forestry. —I might mention that Cirencester is especially favourably situated with regard to forest, being in close proximity to Lord Bathurst's woods, which have been said to possess some of the best beech and larch in Europe. There are also mixed woods, oak, ash, and Scotch pine and sycamore, &c. It is also within comparatively easy reach of Colesbourne, Postworth, Berkeley, Longleat, the Forest of Dean and Savernake and others, so that it has exceptional facilities for forestry.

10008. (*By Lord Moreton.*) In your opinion the students have unusually good facilities for studying old woods as well as the ordinary young stuff that is being produced in the nursery gardens?—I should say so. I do not know any part of England where they have so many combined facilities.

10009. I have no doubt you will agree with me that Lord Bathurst's woods have had, unlike a great many other woods, the advantage of being looked after for a great number of years by an expert in forestry?—Yes; they are exceedingly well-managed.

10010. (*By Lord Barnard.*) I suppose you would admit that the standard of forestry in this country is terribly low?—Yes.

10011. And that there is enormous scope for improvement in that direction?—Yes. Professor Schlich, giving us lectures some time ago, laid great stress upon that.

10012. You are trying now to raise the standard?—Yes.

10013. By giving your students increased technical knowledge and less rule-of-thumb knowledge?—Yes.

10014. You have great facilities for giving that?—Great facilities.

10015. Is there much planting going on in the district?—At Colesbourne there is planting going on on a large scale.

10016. I do not know whether you are aware of the very great dearth of instructors in forestry at the present moment?—Certainly.

10017. I am connected with a college in the North

Rev. J. B.
McClellan.

20 June, 1907

Rev. J. B.
McClellan.
20 June, 1907

of England, where we have a forestry instructor. The first man was tempted away to Ireland before we had him two years, and we have now got another man. I should think there must be a great opening for trained forestry instructors?—I should think so.

10018. I suppose you would recognise that a forestry instructor would be no good unless he had a practical knowledge of woods?—Certainly. We had some difficulty in appointing a successor to our previous Professor, who had a sound practical knowledge.

10019. The botanic garden is a feature in your instruction?—Yes, that is a very important feature in the instruction. It is one-and-a-quarter acres in extent, and there are no less than 67 beds of grasses, both good and bad; it has 52 beds for economic plants, and 48 beds for the natural orders, and the students under the professor of botany have their practical classes there every week. The matter of the grasses is an exceedingly important feature for agricultural education.

10020. Are there any questions that occur to you which I have not asked you generally on the present condition of your buildings, equipment, facilities, and so on?—No, I think you have gone through everything.

10021. There is just one subject you have not told us of, that is, the system of administration; in whom is the management vested?—At the present time under the supplemental charter of 1870, which is the one now existing, the government is vested in 10 members of a committee of management; six of those are elected to represent the bond holders, and four to represent the old shareholders.

10022. There are no representatives at present of any outside bodies?—At present, none.

10023. Assuming that the central body in London, the Government or the local authorities could be induced to give you any financial assistance, you would not object, would you, to their being represented on the board of management?—No, we should welcome them. I think I am quite justified in stating that on behalf of the Committee.

10024. How often do the Committee meet?—The present committee of management meet once a year; there are special committees at other times.

10025. That is a long interval. Do you carry on the management of the institution entirely?—Practically so, under the Bye-laws; but I am in constant communication with the chairman on every important point that arises, and I think I may say that the chairman is in communication with his colleagues more frequently than I know.

10026. Have you a clerk who conducts the correspondence?—I conduct it myself.

10027. Who keeps the accounts?—A clerk keeps the accounts, the Secretary prepares them for audit, and they are audited every year by three auditors.

10028. Professional auditors or amateurs?—Not strictly professional auditors, but still they are experienced business men.

10029. Do you teach book-keeping?—At the College?

10030. Yes.—Certainly, one of the best systems.

10031. Specially applicable to farming?—It is the double entry system, but there are also, in addition, farm journals kept.

10031A. Because it strikes me that the two classes of men whom you profess to educate, the land agent and the practical farmer, would require different instruction in book-keeping, although no doubt it would be as well in each case that the one should know something of the book-keeping of the other?—I think it is essential that both classes should learn the principles of double entry, but the farmer should have special books for the farm work, although, unless he understands the principles of double entry, I do not think he will ever keep accounts in a satisfactory way. If he does understand the principles of double entry, he may keep accounts for every particular field.

10032. We have had a good deal of evidence on the subject of farmers' book-keeping?—No doubt, and of estate agents, also, I suppose.

10033. No, we have principally considered it from a farmer's point of view, and probably such an elaborate system as you teach would be of very little use to a man who had been educated at an elementary school?—Our system would be easily comprehended.

10034. Do you think a man who has been trained at your college, and who becomes a land agent, is sufficiently instructed in book-keeping to be able to say to a tenant, on an estate of which he was agent, "Now, I will show you how to keep your books"?—Yes, we have several old students who are estate agents now who do that with their farmers.

10035. You think your students are sufficiently trained in the principles of the thing to make it clear to those they may be brought in contact with?—Yes, I am quite satisfied that they are.

10036. (By Mr. Medd.) It is desirable that the equipment should, if possible, be improved, internally, is it not?—For our present purposes, I should have thought not.

10037. I should have thought the museum, for example, might have been improved?—We have improved it of late years, and for our present purposes I think it is sufficient; it is very largely furnished for every department, agriculture, veterinary, chemistry, and geology, and the rest.

10038. I should have thought it would have been a very good ground for urging that additional public aid should be given, comparing the equipment of the rest of the College with corresponding colleges?—I am surprised to hear that; but if we extended, as I have wished to extend our work, in various directions, of course then we should develop the equipment of our museum, and ought to do so.

10039. (By Lord Barnard.) Before I pass away from the College, my eye has caught this interesting table which you have put before us, on the experiments with grass land. I have already asked you some questions on the subject, and I gather from you that the information contained here was practically only for the information of your own students?—It is hoped it will be of use to the public, because it is published in our *Students' Gazette*, which has a very wide circulation. It is always sent to the editors of agricultural papers, and they generally make large extracts from the reports every year, so that the public really get the full benefit of the records.

10040. (By Mr. Latham.) Are these records published in detail exactly as you have given them to us?—Yes, year by year, in the *Students' Gazette*.

10041. Have the public a good opportunity of knowing exactly the result of these several experiments as published by you in public papers?—They have, in this way: they are published in the August number of the *Students' Gazette*, which appears every term, and that number is not only sent to the Board of Agriculture, but also to every important agricultural newspaper, and the returns are generally copied out in some other papers.

10042. (By Lord Barnard.) To take, for example, the College with which I am associated in Newcastle; this is not sent there, is it?—No, it is not sent to the various colleges.

10043. Do not you think it is possible that such information might be useful to the scientific men at all these places for the purpose of comparing them with their own experiments?—I have no doubt it would be.

10044. It would either confirm or throw doubt upon the results of their own experiments?—Certainly.

10045. In the same way, do not you think it very desirable that you should be in possession of the results of the experiments carried on by the other colleges?—Yes, I think an interchange of results is very desirable.

10046. I should suggest that public money should only be given on condition that such information was made public property for the benefit of the public at large?—Certainly. Conditions would be laid down, naturally. You see, we have been working entirely without assistance up to the present.

10047. Yes. Now we pass on to the financial position of the College. Does the income which you receive at the present day meet the expenditure?—No, it does not, and it has not done so for several years.

10048. From what source does the balance come?—From private sources; amounts to about £15,000 have come from private sources; £7,000 from one private source alone.

10049. Do you think that is satisfactory?—Certainly not.

10050. Would it be possible to increase your income in any way?—Our income is entirely dependent upon

Rev. J. B.
McClellan,
20 June, 1907

fees, and when we consider the lower fees that can be charged by colleges which are receiving State and County Council assistance, it is impossible for us to consider our position otherwise than most precarious. I have proposed to our Chairman a question whether we can afford to reduce our fees, and he says, certainly not, we cannot afford to reduce them. It is also certain that without assistance we cannot go on very much longer. I think I may put it that way.

10051. Have the fees increased from what they were originally?—Yes, they have been very much increased from what they were originally.

10052. Then the cost of instruction, I suppose, and other expenses, have also increased?—The cost of instruction has increased, and the cost of living and other expenses have increased.

10053. (By Mr. Latham.) What was this payment of £45 per term originally?—The original payment in 1845, when the charter was granted, was what I may call the ridiculously low sum of £30 a year. Perhaps I may be allowed to repeat that the College had got into very heavy debt three years afterwards, so the fee was raised from £30 to £80, since when it was raised in my predecessor's time to £125, and in my own time to £135, where it stands at present.

10054. (By Mr. Medd.) Have you not found within the last few years that similar institutions in receipt of State and local aid have been able to attract pupils who would otherwise have come to you and are quite capable really of paying the high fees charged by you?—Certainly; cases have been mentioned to me and cases have gone from our College, because they could get a somewhat similar education elsewhere at much lower fees.

10055. Then it comes to this, that a certain portion of this public money is being utilised for the purpose of educating the sons of men who could well afford to pay for themselves?—Undoubtedly.

10056. (By Mr. Latham.) You have never made any attempt to have two classes of fees?—No.

10057. (By Lord Barnard.) You told us that you personally conduct most of the correspondence; I suppose that includes correspondence with prospective students?—Yes.

10058. Then you may have some experience on the point that I am going to ask you. Is it your opinion that at the present time, in consequence of the competition of these other places to which you have referred, and perhaps for other reasons, that the number of students is steadily decreasing, and is it your anticipation that that will probably continue to decrease?—My answer to that is in the affirmative in both cases.

10059. You have no endowment?—We have no endowments whatever; we have conducted the College throughout our whole period of 65 years without any endowment.

10060. (By Lord Moreton.) I suppose now that of the class that the College might expect to draw the pupils from in the future, as they have done in the past, many of them will possibly prefer to go to the State-aided University of Cambridge?—There is that possibility.

10061. Apart from all these other red spots on the map?—Yes, quite so. Of course up till now we have regularly had students, and at the present moment we have students, who have taken their degree at Cambridge and have come to us, just as we have students at the present moment who have taken their degree at Oxford and have come to us; but unless we get some assistance, and are able to reduce our fees, they may go elsewhere.

10062. (By Lord Barnard.) Are your accounts published at all?—The accounts are submitted every year to the Court of Shareholders, and a copy is sent to the Board of Trade every year.

10063. Why on earth is that done?—It is so ordered by the first charter, and is required by the Board.

10064. Are you personally acquainted with all the circumstances about the bonds?—I think so.

10065. You have a solicitor, I daresay?—Yes.

10066. The reason I mention the subject is because you have put it down?—Yes; the bonds —

10067. Will you tell us what you were going to say about the bonds?—The bonds were issued, as I have previously stated, in 1870 for £30,000; of these, £11,600 have been paid off: £6,400 have been voluntarily surrendered as a benefaction to the College; and £12,000 remain, bearing interest at 4 per cent. They are not allowed to bear higher interest.

10068. Has the board of management ever taken stock of late years of their financial position? Have they ever taken expert advice on the subject from a valuer and an accountant?—No, I believe not; but there is valuation of live and dead stock every year, and an old valuation of furniture, &c., brought forward annually with corrections for depreciation.

10069. Are the buildings kept up in good order?—Very good order. We have an architect belonging to the College—at least, practically on the College staff.

10070. Do you keep tradesmen on your staff; have you a joiner and a plumber and a painter, and so on?—No, we employ tradesmen from the town, except in the case of those who are specially engaged for the instruction of students in practical carpentry, forge and smith work, and so on.

10071. (By Mr. Medd.) The actual condition of the buildings is excellent?—I think so; good, at any rate.

10072. I made the remark to you the last time I was there, what a pity it would be if anything occurred to prevent the continuance of the College?—You did.

10073. (By Lord Moreton.) At the same time I am right in saying the buildings are not so young as they once were, and as time goes on there may be very serious expense hanging over the College as regards repairs, which would be a very heavy tax on it with its present unaided finances?—Would you say a serious one? Of course there must be a more or less serious one. Only last year chimney stacks needed to be put in thoroughly good repair—rebuilt, in fact; the roofs have been looked to from time to time, and are in fair repair.

10074. (By Lord Barnard.) To conclude this portion of the subject, what is your opinion as to the present financial position, as far as you are acquainted with it?—The present financial position is extremely precarious. It can scarcely, I think, be expected that the committee of management, notwithstanding their public spirit, can carry on a college from year to year at a loss; therefore, without financial assistance, sooner or later, the College will necessarily be closed; that is my opinion.

10075. Have you ever approached the Board of Agriculture, or the Treasury, or any other Government department, to be recognised as a Government institution?—We have done so indirectly, but they have never seen their way to assist us without certain changes, which at the time were not considered practicable by the committee; but at the present moment the committee of management are thoroughly prepared to welcome proposals which may be made by the Board of Agriculture in regard to, shall I say, a reconstruction of the College, if necessary.

10076. By a reconstruction of the College you do not mean of the buildings—you mean of the management?—Yes, the management—the constitution.

10077. Perhaps you will explain the position with regard to that?—I think what I may call *pourparlers* have gone on—that is the best way to put it—but one difficulty has been the fact that the suggested changes in the management have been thought too fundamental; and another, that the bondholders are entitled under the charter to 4 per cent. interest on their bonds. I think those have been the two difficulties; but there has been no definite application till quite recently as to whether the Board could see fit to gather together representatives of counties, to ascertain whether such counties could, with the assistance of the Board of Agriculture, come into co-operation with the College authorities.

10078. You told us that a great many of those bonds had been paid off?—Yes, £11,600; £1,900 was paid off in 1885 alone.

10079. Were they paid off with profits made out of the College at the time?—Yes.

10080. So that there was a day when the College was making a profit?—Certainly; during several years bonds were paid off out of profit.

10081. I wonder if you will agree with the suggestion from me to this effect, that, admitting the College had at one time fulfilled an extremely useful function in agricultural education, and had a great measure of success, owing probably to the altered circumstances of the present day it has now ceased to fulfil those functions, and possibly there is no possibility of its ever fulfilling them again to the same extent, and in the same way on the present footing?—I do not think

Rev. J. B.
M^cClellan.
20 June, 1907

there is a difficulty in fulfilling the functions, but there is a great difficulty in obtaining the finance.

10082. (*By Lord Moreton.*) May I ask whether the changed conditions at the present day are not owing to the State-aid that has been given to rival institutions?—That is the point I mentioned before.

10083. Yes, but I want you to bring it out in extra strong colours?—Yes, emphatically so.

10084. (*By Mr. Medd.*) You would now be prepared to submit to State inspection, to have a representative governing body, to act as a collegiate centre for Gloucester, or a group of counties to be affiliated to a university department if one is established, as we hope, at Oxford?—Certainly; in all those respects I would say yes.

10085. I may say we had evidence here the other day from the Vice-Chancellor of Oxford, who spoke very anxiously about carrying out that project, and also from Professor Lloyd Morgan of the University College of Bristol, and in everything Professor Morgan said he expressed his utmost anxiety to co-operate with Cirencester that no step would be taken by his College at any time to injure Cirencester, but that he should look upon you as an essential adjunct to them, and possibly one or two of your chief students might go to him for the purposes of research. That is a view which probably recommends itself to you?—Certainly. I have a paper here—I do not know whether it is more or less a private paper, but I do not think the governing body of the College would have any objection to me passing it into the hands of the Committee—which gives reasons specially for the decline in the number of students. (*Handing document.*)

10086. (*By Lord Barnard.*) Do you think if your College were recognised as a public institution it might in time receive benefactions from various persons—what are technically known as charities?—It is difficult for me to say that.

10087. Are you not aware that a gentleman in Shropshire recently left £26,000 towards a College there?—That has always been my hope for our own College of Cirencester, but I am afraid that I have never expected it.

10088. Why not, when it has already occurred in an adjoining county?—I can only say I am afraid I have not expected it.

10089. Has it not been the habit from time immemorial for donors to found charities from a few shillings up to thousands of pounds for educational purposes?—I am talking of what are known technically as charities with permanent endowments?—We have never had that good fortune.

10090. No, but I can see no reason why something of the same kind should not happen in your case as has happened through all times in this country, that when an institution has proved its usefulness benefactors generally will endow it. You have not contemplated the possibility of such a thing?—I have hoped for it, but I cannot say that I have been expecting it.

10091. Do you not think there is a possibility of such a thing happening if the institution became recognised as a public institution—that public opinion would lead some generous-minded person to do in your case what has been done in the case of so many others?—If we were a public institution probably that might be so, and we are anxious to become a public institution.

10092. (*By Mr. Latham.*) Reading College could never have existed if it had not been for the endowments which it received?—No. Let us become a public institution. We want to become one now, but I think we want to become one by reconstruction and not by dissolution. I think it would be a great injustice—if I may be permitted to say that—to all the students who have passed through the College, of whom there have been no less than 3,500, if we were to dissolve, if it could be avoided.

10093. You have told us that the farm is an adjunct to the College; you have nothing to do with the farm yourself?—No, we do not manage it ourselves; it is under the management of a tenant.

10094. I see you have put down an expenditure of £820 for the purchase of live stock; what is that for?—That applies to expenditure on the 40 acres.

10095. Surely not?—Yes; but it is noted as the year's total expenditure on land, live stock, and dairy, not purchase of live stock only.

10096. It is a large amount to spend on 40 acres?—It would be so if it did not include the dairy and many other expenses.

10097. Is the dairy a loss to you, then?—Not at all; the amount in question includes sundry wages, dairy manager's salary, cattle foods, cost of purchased milk, &c., and, in addition, the purchase of live stock. [*The Witness subsequently sent to the Committee a full analysis shewing in detail how this sum was expended.*]

10098. (*By Lord Barnard.*) Is it your opinion that, unless some step is taken, the institution will be in danger of coming to an end?—Yes, that is my opinion.

10099. Is it your further opinion that such an end would be a misfortune from a public point of view?—I think so decidedly.

10100. A means of affording agricultural instruction would be lost to the public?—Yes, I think so. The Board has got no institution in this part of these counties. Of course, there is a great deal more work which ought to be done, and which we have been prevented from doing through not receiving assistance; for example, we might have made ourselves an experimental station for the benefit of the public; we might have had itinerant lectures, demonstration areas, vacation classes; all ought to be done, but we have been debarred by not having the money.

10101. The reason I did not ask you about those subjects is because practically that is the work the County Council carry on, and I do not suppose you would care to compete with them?—Quite so.

10102. I asked you some questions just now as to whether you had ever communicated with the central Government. Have you ever communicated with any of the local bodies?—Yes, recently we have.

10103. Did you get to *pourparlers* in that case?—Yes.

10104. Did you get beyond that?—No, I think not. The answer was that the moneys they already received for agricultural education had been already allocated.

10105. (*By Mr. Medd.*) When the public understand that you are prepared to co-operate with them in agricultural education, the local authorities, both of Gloucestershire, and possibly Wiltshire, and it might be of Worcestershire, are likely to assist to some extent?—I think it is likely.

10106. It is a proposal which has not been definitely before them, only problematically considered; and with regard to Gloucestershire, there is no reason why all the money expended on agricultural education in Gloucestershire should not pass through you as the channel of distribution?—I am very glad to hear that you think so.

10107. That has never been refused, for instance?—Not that I am aware of.

10108. If I may put it in this way. You have hitherto refused to render such facilities, for reasons which were good to you, which you might have rendered. Now that you are prepared to render them, the attitude of the local authority to you appears to be very different?—I understand so.

10109. (*By Mr. Latham.*) It would lessen the prestige, probably, of Cirencester if you were to allow it to be turned into one of those red spots, would it not?—I think it would raise our prestige if we had Government recognition, and, permit me to add, affiliation to a University, e.g., Oxford, as previously suggested by Mr. Medd.

10110. (*By Mr. Medd.*) You have already answered me that you would like to become a collegiate centre for a single or a group of counties?—Yes.

10111. You would like everyone in this Committee to see that that white area on the map was coloured in a manner corresponding to the rest of England?—Yes.

10112. By making Cirencester, with all its admirable equipment and prestige, a red collegiate centre for a group of counties?—Precisely so.

Mr. WALTER P. WRIGHT called and examined.

10113. (*By Lord Barnard.*) Would you kindly tell the Committee what is exactly the position you hold?—I am Horticultural Superintendent under the Kent County Council and Horticultural Instructor at the South-Eastern College at Wye—two separate appointments.

10114. Will you give the Committee some information as to the inception of horticultural education?—Shall I make a short statement as to that?

10115. You know the objects for which this Committee exists?—Quite.

10116. Anything that is material for us to report we shall be glad if you will tell us, but purely historical facts that are not useful for that purpose pray do not trouble to give.—Then I do not think it need be gone into. I will simply remind you about the "whisky money" given 18 years ago, and the county councils taking up educational work through the medium of a technical education committee. That is really all I need say on that particular point.

10117. I think we have a good deal of information about the "whisky money." About the year 1890 several county councils took over this work, and appointed instructors in horticulture?—Yes.

10118. They have been engaged since that date in doing that work?—Yes, my appointment under the Kent County Council did not begin till 1892; but I was doing a little work before then.

10119. What is your opinion of the work that has been done in the last 16 years?—Of course I am speaking of horticulture in particular; that is quite understood?

10120. Yes.—I think very valuable work indeed has been done in horticulture.

10121. Do your duties lie principally with cottagers, or do you undertake to teach more elaborate gardening?—With regard to my appointment under the Kent County Council it is more particularly with cottagers; I came into contact with other classes principally through my appointment on the staff at Wye.

10122. Has cottage gardening improved in Kent?—It has improved enormously.

10123. I mean from a commercial point of view, not from the point of view of the gardens looking prettier than they used to?—I cannot say that cottagers, as a class, have made any particular financial advance—in the way of becoming market gardeners.

10124. Have they better produce for their own consumption?—Yes, undoubtedly, and there are more flower shows, and more competitions; the whole thing has advanced enormously.

10125. It has an economic value?—To the cottager it is of considerable economic value, because it gives him a supply of good, cheap food.

10126. In former days, surely Kent cottagers were famous for their gardens?—I think they have always been more or less famous.

10127. You think they have made an advance even upon their original fame?—Yes, from my own observation I think they have made a very great advance. We started 11 years ago a series of garden competitions: these are quite different things from show competitions; at show competitions they simply exhibit produce, where they grow it is another matter, and they do not always grow it themselves. When the Kent County Council established these competitions they were made for gardens and allotments, and we fixed a scale of marks for the different vegetables, and for the system of cropping, and I have been able to estimate by the increase or decrease, as the case may be, in different districts, the result of the work, and there has been a steady advance.

10128. Do you go about lecturing?—I lecture in the winter, and at every place I lecture at in the winter I am enabled to offer the cottagers a competition during the following summer; every cottager who comes to the lecture in the winter is eligible to enter for this competition, and to have his garden judged in the summer. Our system has been taken up in many places, and I have been invited to judge in many other places.

10129. Do cottagers apply to you ever for information and assistance?—Yes, frequently; I am always having communications from them.

10130. You think they appreciate the services which the County Council supplies to them?—Very much indeed. If permitted, I could say a great deal on that, for really the horticultural work we have done in Kent has revolutionised public sentiment towards agricultural education. When lectures in the rural districts first began, it was with the University Extension lectures, given by extremely capable men, but the information was rather above the heads of the working people, and the thing was dwindling very much. The establishment of practical instruction and these competitions put it on an entirely different footing, and I am very glad to say the whole attitude of the people now is favourable towards agricultural instruction.

10131. You find that there has been a great change?—A great change; a complete reversal of public opinion in the county.

10132. And probably opinion is not completely formed even now?—It is still ripening.

10133. Fruit growing, and so on, is a considerable industry in Kent?—A very great industry.

10134. Does that come under your ken?—Yes; we include fruit growing in our syllabus; we give them a choice of sets of lectures on fruit and vegetables, and flowers.

10135. Do the small holders go in for orchards and fruit?—To some extent, but there is not a considerable demand for small holdings in Kent; there is no such movement in Kent for small holdings as there is in Lincolnshire, for example.

10136. I suppose hop growing requires large holdings?—A great deal of capital is invested in hop cultivation, and also in fruit, and the labourers get comparatively high wages, so that I do not think there is likely to be any strong demand for small holdings in Kent.

10137. Do you know whether there are any small holdings for hops?—Very few indeed, I think.

10138. (*By Mr. Latham.*) There are small holders that grow hops?—Probably only a few; there may be just a few cases, but they are very, very few; it is not at all the rule. It is a very speculative crop, and that debar people with small capital from growing hops.

10139. (*By Lord Barnard.*) Do hops come within your jurisdiction at all?—No, not at all; not in either capacity.

10140. Are there many elementary school gardens in Kent?—Yes, a considerable number.

10141. Are they increasing?—They are.

10142. Do the children take an interest in them?—A very considerable interest.

10143. Do you encourage their formation whenever you get the chance?—The county has encouraged them a good deal; but not in one particular direction—that is to say, owing to want of funds, they have not been able to give me charge of the whole of the elementary school gardens, and they are only inspected by H.M. inspectors under the Board of Education, and, naturally, I am not at all satisfied with that. I think a very important thing in connection with school gardens is to have them inspected by experts—practical men.

10144. Rather than by gentlemen who, I believe I am right in saying, are in many cases distinguished classmates of Oxford or Cambridge?—I certainly think that practical inspection should be given as well.

10145. (*By Mr. Latham.*) You mean you would rather have an inspector who was more such a man as yourself?—Yes, I am afraid so. I have felt in a little difficulty in pressing that point, because of my personal interest in it; I mean to say, it would be a certain source of additional income to me; but I think it is very important that they should be inspected by practical men.

10146. (*By Lord Barnard.*) Are there two administrative counties in Kent?—No, only one.

Mr. W. P.
Wright.

20 June, 1907

Mr. W. P.
Wright.

20 June, 1907

10147. You are speaking of the whole county?—Yes.

10148. Possibly you have not referred to the Report of the Board of Agriculture recently. That shows that there are a very large number of small holders in Kent of between 5 and 50 acres. (*Handing Report*)?—Thank you; I had not noticed the large number of small holdings. Probably many of these are men in the Sevenoaks district—strawberry growers, who grow partly for the bigger fruit growers and jam factories.

10149. Those were rather the men I was referring to, and they cultivate the land in the way you particularly deal with, namely, strawberries. Let us go back to the school gardens. Do you find an increasing interest taken in school gardens?—Yes, all over the county.

10150. Do you consider greater attention should be paid to that subject?—Yes, I think it should be carried on when the children leave school; much more should be done in that direction; it is not properly linked up; that is what I consider the chief defect.

10151. You mention in the *précis* of your evidence that you sent in to the Secretary of this Committee “the value of training in a private garden, inasmuch as it gives a grounding in practical work”?—Yes.

10152. I do not understand what your suggestion is in connection with that. Surely you do not suggest that everybody who is going to take up fruit growing should go through a course of training in a big private garden?—No. What I had in my mind was the future of the boys that we are dealing with in the school gardens. Many of those boys are the children of labourers, and a good many of them drift away after leaving school and we lose them; we do not follow them up beyond that point. That is where I think we have got a great deal of work to do, but that will come in the future.

10153. With regard to gardening for pecuniary advantage, whether it is only a cottage garden or whether it is a commercial garden, do you consider that scientific knowledge is of any or of great value?—Yes, I consider it is of very great importance.

10154. In the absence of scientific knowledge you state here that you think the work comes to be done merely by rote?—That is my principal point—unintelligently.

10155. So that if anything happens out of the ordinary course the gardener does not know what to do?—That is so, because he has not a general grasp of the principles which underlie the work.

10156. What is the result in the case of the man who does practical work only and nothing more?—He drifts into the rank and file of average gardeners whose wages are 25s. to 30s. a week, and he may become extremely egotistical and a trial to his master.

10157. Are many of the private gardens in Kent very large?—Yes, they certainly are considerable; it is a county with many private houses—almost a residential county.

10158. (*By Mr. Latham.*) Would not a gardener from one of these private gardens be equal to teaching these young men?—He could teach them as far as his own knowledge goes, but he has not any scientific knowledge as a rule. He could train them to follow his own footsteps as a private gardener, but the private gardening profession is very poorly paid.

10159. We have had evidence about a society in Berkshire of private gardeners, some of whom are almost at the top of the tree?—In what respect do you mean?

10160. There is an association not very far from where I live whose members are composed of these private gardeners in gentlemen's gardens, and they have meetings, and they are very intelligent, and it is very striking the way in which they try to teach each other?—These mutual associations amongst gardeners are excellent, but if you follow them through you will find there is not a great deal of experimental or research work touched upon; they are almost always working in the same groove. It is good as far as it goes, but I should like to see it go further.

10161. (*By Lord Barnard.*) You think it is desirable that the present system should be altered in that respect?—I think there ought to be an advance in it, because they keep to the same lines year after year. The average gardener of to-day is approximately what he was 50 years ago, and 50 years hence he may be just the same as he is to-day, unless something is done in the way of scientific education.

10162. If the market gardener has a somewhat poor

outlook in front of him, and we have gathered from some of the witnesses who have come here that he has not a very bright outlook, it seems doubtful whether scientific education would be taken up by him except as a luxury. If it is not a profitable employment I do not know that we could very well make a recommendation to the Government that a grant should be given?—Of course you have not asked me any questions yet with regard to the commercial side. So far as the private side is concerned, the wages of gardeners are low.

10163. Of course their wages do not represent the whole of their emoluments?—No, sometimes they have their cottages, their coal, and their vegetables, but I think there would be a tendency for the position of gardeners to improve if they were better educated men.

10164. If you have a man better educated he expects higher remuneration?—That is one of my points.

10165. You think people would be prepared to pay more if they had better educated men?—Yes; I think their gardens would be better controlled, and it would be true economy if they got superior men.

10166. Do you not think what you say of gardeners is true of domestic servants—that is to say, grooms, and butlers, and coachmen, and gamekeepers—they are all of them, in my experience, rather inclined to be unprogressive, and to do their work by rote?—Quite so.

10167. What I understand you to argue is that private gardeners earn very little, and the reason they do so is because they are not very progressive?—That is my point.

10168. My impression was rather that it was owing to the fact that when a man gets a berth in a private establishment he thinks he is comfortably off, and if the berth does not suit him, he will be able to get another that will, and he has no feeling of responsibility because he knows he has someone to provide for him, and he does not trouble to progress himself, and he will not bring up his boys to be any better than he is himself?—Is not that my own point—that they are an unprogressive class, because their education is in a certain groove, and they do not get beyond that groove?

10169. The only thing is I am not so hopeful as you are that you can improve the status of private gardeners. I rather doubt it, taking them as a class, because I think they lack the spur that the man who is working for his own living has, the measure of whose success lies in his own exertions, and in the exercise of his own brains?—I agree with you that with a man of a certain type of education that must be so, but it certainly seems to me that a man of a somewhat higher standard of education would be more progressive. I cannot imagine a man with a well-trained, scientific mind ever falling into that groove, and being content to remain in it.

10170. May I give you an instance—this is not of a gardener. I have a farm; I do not have to make my living out of it, but I think on my farm that I ought to have and do everything up-to-date, and ought to weigh the morning and evening milk, and that kind of thing, but, although I am constantly urging it, I cannot get it done, and I attribute it largely to the fact that my servants do not depend upon it for their living, like a man who is farming on his own account, and that applies also to my gardener and others. However, you wanted to say something on the other side, the subject of commercial gardening in Kent?—Yes, to begin with, it is a very considerable industry, as I daresay you know. There is a great deal of market-gardening conducted in the county, and more particularly in the neighbourhood of London, at Swanley, and Sidcup, and I think that should tend to increase.

10171. It is tending to increase, is it not?—It is growing.

10172. Do you give any instruction in fruit grading and packing?—Yes; at the College.

10173. We have been told by other witnesses that it is almost essential for persons who are going to sell fruit that they should be properly educated in grading and packing?—It is very important, indeed, that the packing of fruit should be better, and I am very glad to say that improvement is going on. As an instance of the fact that we really are moving, I may say that we had a fruit conference at Wye last November. I myself was lecturing on strawberries, and I exhibited a number of up-to-date packing appliances, and explained how they were used. We had an exhibition of them in one of the College laboratories, and I noticed that that

aroused almost more interest than anything else at the meeting, clearly showing that there is an interest in it, and that growers are alive to the fact that it is important. We have to move in two stages; the first stage is to teach them that there is something worth studying, and the second stage is to get them to study it.

10174. Do you think in the face of the growing competition from British Colonies and abroad, that fruit growing is really a profitable employment in this country?—I think so, provided we grow specially choice varieties, and put them on the market at times when the foreigners cannot compete very strongly with us.

10175. They also can put some good things on the market. I remember eating some of the best pears I ever ate from Cape Colony in March?—Yes, we cannot, I am afraid, compete with them after Christmas unless we can develop cold storage. Bearing on that, I may say that a few years ago the Kent Technical Education Committee conducted a series of experiments in cold storage at Dartford. One of the members of the Committee was a Mr. Hesketh, a partner in the firm of Hall & Sons, who do a very large business in fitting up the vessels that bring fruit from the Colonies. I had practically charge of these experiments. The Committee carried them on for several months, and issued a report, of which it printed a considerable number. During the whole of the time we had those experiments going on none of the fruit growers in Kent came to see what we were doing, and the number of applications for copies of the pamphlet that we published, giving our results, was, perhaps, a dozen from people in this country, but hundreds of applications came to us from the Colonies. No attention whatever was paid to the work, do what we would, in Kent; all the attention came from abroad. Letters of enquiry came from all parts of the world, except from our own county. The only interest I could see in the matter in Kent was when I was able to exhibit in October of one year a particular variety of perishable apple that we put into cold storage in the previous October; that did rouse them. That was at a fruit show at Maidstone. But when Mr. Hesketh discovered it was doing no particular good in Kent the thing was given up; no doubt it was costing him a good deal of money. That was six or seven years ago, and it shows the apathy there is on the part of the home growers, but we are trying to break that down.

10176. Can you suggest to the Committee any way in which public money could, with advantage, be utilised to improve the commercial position of these small growers. When I say with advantage, I mean as a matter of urgent public necessity?—I think a good deal could be done if we could establish some fruit stations in different parts of the counties, notably in Kent. I think that would be a great advantage. The position at present is this, that we have the college at Wye, which is down in East Kent, and a great many of the large market growers are in the London district, and as we have not got a very progressive railway company, it is quite a business to get them down there to see our work, and we can only do it on one or two special occasions in the year. I think that is rather an unfortunate state of affairs. Although Wye is always open to them, they only come really, as a matter of fact, on special occasions by special invitation; theoretically they are always coming, but in practice they are not.

10177. They do come on special days?—Yes.

10178. And appreciate what they see?—Very greatly.

10179. And ask questions and discuss matters?—Yes, very freely. We had a Fruit Conference at Wye last November. I have just referred to it in connection with the strawberries, and we had the place crowded with fruit growers; we had lectures on several different fruit subjects, and we had a very keen discussion.

10180. They would not come all that way, I suppose, unless they thought they were going to get some advantage from it?—No, certainly not.

10181. So that I imagine the value of the teaching and the demonstration work is appreciated by growers?—Very greatly appreciated.

10182. Do not you anticipate that that appreciation will increase?—Yes, I think it is bound to increase.

10183. Will you have to extend your operations in any way?—I think it is bound to increase, because it is a new force and it is bound to go on growing. I do think if we could have stations in other parts of the

county in connection with Wye it would be a very great help. At Wye we have not got a naturally good fruit soil, apart from our geographical position.

10184. Where is your office?—My clerical work is done at my own home—Lyminge, Kent.

10185. I suppose the cost of travelling in your case must be rather heavy on the public, is it not, with a large county like Kent?—Well, I myself have a season ticket for the whole of the county; that is the only way I can work it economically; it is a very big county, and it cannot be done economically without having a season ticket; that I pay for myself.

10186. Your salary is inclusive of your travelling expenses?—Yes.

10187. So that the cost must fall on the ratepayers eventually?—Yes, I suppose it does do that, because they allow me a certain sum as expenses for each duty I perform.

10188. Do you write many leaflets?—For the Board of Agriculture, do you mean?

10189. No, for the county?—The county does not issue leaflets.

10190. The Board of Agriculture do?—The Board of Agriculture do.

10191. Do you think they are of use?—Undoubtedly.

10192. When you go about do you recommend cottagers and people to make use of them?—Yes, and not only that, but I take them about with me and distribute them. The head office sends me a list and I choose from the list those that I think will be suitable for the particular centre that I am visiting, and they are always taken up very quickly.

10193. I suppose one rather sore point with Kent producers is, that they see these fast trains with foreign produce flying past them—produce that they perhaps ought to produce themselves?—Yes, you have touched on a very sore point. A great deal of it comes into Dover and some into Folkestone, and a good many growers have told me that they have had their own produce standing in sidings at the local stations when a mail train comes through with a good many wagons of foreign fruit. Of course there is a reason for the cheap through freights: it is the handling in bulk; but it is a very hard thing for the home growers to see competitive foreign fruit going through in express trains while their own produce is kept back, and while, at the same time, they have to pay more carriage for a shorter distance.

10194. You think more money should be given for the public instruction in horticulture, and for the dissemination of horticultural literature?—I do.

10195. Do you think that should come from the Treasury or from the Board of Agriculture, or both, or from the local authority?—I think it should partly come from the Board of Agriculture, because they understand what is needed.

10196. Better than the local authority?—No, I think it ought to come from both the Board of Agriculture and the local authority. Wye, of course, is already helped by the Board as far as its funds permit, but they are inadequate.

10197. A suggestion has been made by a witness here that any funds given by the State should be given in an equal amount to the funds provided by the local authority, so that it should not fall exclusively on the general tax-payer?—I think there is a great deal in that, more particularly in connection with the work the local authorities are doing in school gardens.

10198. The argument of the witness who put the suggestion forward was, that if one local authority would not give anything it would be unfair to the local authority which was providing its share to give to the one which was doing nothing a larger grant, because they would require more from the Government?—Yes.

10199. You agree with that?—Yes. I do agree with that.

10200. The same witness also put it very strongly to us that whatever grants were given by the central authority they should be administered through the local authority. What is your opinion on that point—that is to say, that no stipends or payments should be paid by the Board in London, but that the Board should organize and control the work, the local authority being responsible for carrying it out, appointing officers, fixing salaries, and paying them, and so on?—Yes, I

Mr. W. P.
Wright.

20 June, 1907

Mr. W. P.
Wright.
20 June, 1907

agree with that, I think the local authority certainly should do that.

10201. I see in the streets now asparagus being sold on barrows; is that British?—At this time of the year it will be British probably.

10202. It is an innovation, is it not, for asparagus to be sold on barrows in the streets of London?—Yes.

10203. The marketing of such a product as that in that way must be due to an increased knowledge of gardening, and an increased number of market gardeners and a greater supply?—Yes, I have seen great development in that particular crop. The cultivation of asparagus has grown tremendously in Essex and Kent. The French growers, who produce very large asparagus, had at one time practically the whole of the trade; their share is very considerable still, but the English trade has grown very much, and I think it is better asparagus. French asparagus is, of course, large blanched stuff.

10204. The taste of the working classes in the large towns—London and the great manufacturing towns in the North of England—for vegetables and fruit is rapidly growing?—Yes.

10205. For instance, I have been told that the Manchester people are enormous eaters of tomatoes.—Yes.

10206. You think that the Government ought to give a grant to horticulture to stimulate and meet these growing tastes?—Yes.

10207. Did you go to the exhibition of Colonial fruit the other day at the Royal Horticultural Society's Hall?—No, a county duty debarred me, unfortunately.

10208. Then you did not see the new species of orange, which is called the naartje?—I am sorry to say I did not.

10209. The agent told me that the Natal Government is spending the sum of £7,000 for the purpose of promoting the exportation to England of that fruit, which is grown by the Dutch farmers in Natal. Are you aware whether the British Government have ever done anything of that kind?—I am not aware that the Government have ever done anything at all in that way.

10210. You would have been likely to have heard of it if such a thing had ever been done?—Yes.

10211. So that we are behind what our Colonies and foreign countries are doing?—Undoubtedly—considerably behind.

10212. Is there any other point that I have not touched upon that occurs to you?—No, I think we have covered most of the points in my synopsis here. One thing that does come very much home to me is in regard to the school gardening, and that we are not able to carry on continuation school gardens in Kent.

10213. (*By Mr. Latham.*) I happen to have had the opportunity of seeing a great many noblemen and gentlemen's gardeners, and I cannot quite agree with you in what you said about them, and I can scarcely fancy that they would quite agree with you themselves. Do you not think that a great many of those men are very proficient men?—Yes, they are proficient in growing the customary crops. All our public exhibitions show us that the produce is very good. We are now speaking of private gardeners exclusively. It is all very well to grow prize peaches when you are doing it with somebody else's money. It is a very different thing when you are growing them with your own money for profit.

10214. Your remark was that you thought the gentlemen's gardeners went simply on the old lines and showed very little improvement. My experience would scarcely lead me to think you were right. I think that these men do keep on improving?—So far as we can get records of exhibition fruit, the grape is not better grown than it was in years gone by, and the cultivation of peaches out of doors is not so good as it was in years gone by.

10215. Is that because we have not got as good trees or soils, or as good management?—I think it may be partly explained by the fact that glass is a great deal cheaper than it was. I think it is to some extent an economic matter; and then I think some gardeners, perhaps because they specialise a little bit more, have lost a few of the old points; a good many modern gardeners specialise in orchids, and are not so good in fruit and vegetables as they used to be.

10216. Your remarks as to the county of Kent would scarcely be applicable to the whole of England, would it?—Not necessarily applicable for the whole of

England, because Kent is more particularly a gardening county, but I was speaking generally then.

10217. It would be difficult for ordinary gardeners in some parts of England to follow out what Kent does?—I should not expect, on the whole, that they would be able to do so well with out-door fruit as we do in Kent.

10218. Or with vegetables?—I do not think that Kentish soils are more favourable to vegetables; the most prominent exhibitors do not practise in Kent.

10219. The climate has something to do with it?—The climate has something to do with it, certainly, but the principal thing for getting fine vegetables is the soil.

10220. You said that agricultural education was making great strides, in consequence of the teaching of horticulture; did you mean that?—I mean so far as horticulture comes under agriculture. I did not mean that horticultural instruction had any effect on general farming; I cannot see any connection there at all.

10221. I did not quite catch your remark with regard to the foreign fruit *versus* English in the cold storage you spoke about. Do you think it necessary for us to go in for cold storage for our fruit much?—I think it would help us to compete with foreign growers after Christmas.

10222. Apples will keep their quality longer than foreign ones will?—One of our best apples, Cox's Orange Pippin, is not much good after Christmas. That apple is in demand at Christmas as a Christmas fruit, and generally realises a very good price. I do not think we must look to that variety for late supplies, but we do want one or two special varieties of apples to meet the foreign competition after Christmas.

10223. There are certain apples we have from abroad that could not be grown in England?—I think that is so; apples that require a more equable climate than we have.

10224. I am rather speaking in ignorance, but I have heard a good deal of discussion about cold storage, and the opinion seems to be that it is not such a profitable thing as people have been led to suppose?—As a commercial matter it has not been thoroughly tried yet. We had quite remarkable results with such fruit as we had to deal with at Dartford; but I do not think at present we have quite the varieties that would be required to compete with the foreign apples late in the season.

10225. That accounts very much for the little interest that the fruit growers in your district take in it?—Very possibly.

10226. What do you particularly advocate the children should do in the school gardens?—Are you speaking more particularly with regard to the elementary schools?

10227. Yes.—May I put it in this way, that you would like me to say what I think would be the most suitable form the instruction should take?

10228. I want to know what it is going to do for their future life?—Nothing very much, unless it is carried through afterwards. I think that so long as the child is merely taught plain gardening for a year or two before he leaves school, and then runs loose afterwards, it is not of much more value than the teaching of parsing.

10229. If children are taught school-gardening, do you think it gives them an inclination to try and get into market gardens, and so on?—Yes, I do think that.

10230. You think it is an impetus to make them take a greater interest in their future life?—It turns their thoughts in that direction, certainly.

10231. My experience, with very few exceptions, is that school-gardens are barely worth the trouble taken upon them. What would you principally advocate the school-garden teaching to be?—I think the great point is to have all the elementary school gardens inspected by practical men, who are able to judge of the most promising pupils, and then that the pupils should be carried on to continuation gardens, so as to keep the children in hand in order to be able to place them in private gardens, market gardens, fruit farms, or the colleges, as the case might be, through the medium of scholarships. I think the principal defect at the present time is, that when the child leaves school he is finished with, and has to look after himself, and he leaves school at an age when it is very difficult to form an estimate of what he is likely to be capable of—a child of 13 years of age is quite undeveloped.

20 June, 1907

10232. In one garden I could particularly name—I am sorry to say it is an isolated case—there is a great deal of bush-fruit growing taught. Do you not think there might be much more scientific knowledge given to the boy in that way than you give almost in any other way?—I think a boy can be taught through the medium of fruit, or vegetables either for the matter of that, much more general and valuable information than in the ordinary curriculum at the school.

10233. I take a great interest in this myself, and I am always falling out on this point that the instructor does not know what he teaches. I have been rather instrumental in trying to get bush pruning, and those sort of things, made a leading thing in these gardens. They can get more information from that than from small things and vegetables I think?—Now, I see your point, that there should be a collective fruit garden in connection with every set of vegetable gardens.

10234. Yes.—Yes, I entirely agree with that. I think the ideal school garden—the one that is to be of real value—is one which gives each child a small piece to grow his vegetables, and also includes a large piece to teach the class the management of fruit.

10235. And at certain times their fathers and mothers could come round and see what they have done. It is very educational in that way?—Yes, this point of the fruit is important, and it makes it more valuable to have expert instruction and control. The teaching cannot be done entirely by the schoolmasters; they do not know it themselves.

10236. To make these gardens of any great value to the boys themselves, they must be instructed in something that will lead them on in future?—Certainly.

10237. Whether the examiner is such a person as yourself, or whether the examiner is a practical man or not, is very little use if there is nothing there for an examiner to decide on?—Exactly.

10238. I hardly expect you to say what the school gardens should be, but if I may express an opinion myself, I would rather they were in the nature of experimental plots than anything else. Is that your view?—I agree that there should be a general experimental plot, including fruit.

10239. Yes, including bush fruit.

10240. (By Mr. Medd.) You have had one or two very successful school gardens in Kent?—Yes.

10241. I dare say you know the gardens of Orpington and Orlestone?—Yes.

10242. They are very excellent gardens, are they not?—They are excellent.

10243. With regard to school gardens, the value is much more educational than technical, is it not?—So far as the instruction goes I do not think the technical value is very great; it does not go far enough.

10244. Educationally they can be of the greatest value in developing habits of observation and care, and arousing interest in and a knowledge of living things—in short, in teaching a child how to open and use its eyes?—Yes.

10245. That you believe is a valuable use of the day school garden?—Certainly; I was particularly struck with the work they were doing at Orpington. The head master there was telling me the results he got. They were excellent, and the children are much interested in the work.

10246. Yes. It is probably the best in England at the present moment. Now to come to the continuation school garden. You would rather have more technical instruction there, that is to say, the instruction should be directed rather to the industry of horticulture than with an educational object?—Yes.

10247. That is your view?—That is my view.

10248. I may say at one village in Gloucestershire we combined the two—the day school, purely educational, and the continuation school, purely technical. I think no other village does that. That is no reason why every village should not do it, if they will take the trouble. Mr. Latham asked you with regard to pruning. That I think is useful work in the way of teaching more dexterity of the hand; that could usefully be brought into the day school garden?—Yes, it would have its value in training the mind of the child also.

10249. And imparting some dexterity of hand?—Yes.

10250. It is a convenient form of rural manual work?—Yes.

10251. Your object in the continuation school garden is to secure employment as gardeners for the students. That is what we found in that village in Gloucestershire, that the leading nurseryman, Jefferies—you may know him by name—was willing to take as an apprentice any boy, and Lord Bathurst's head gardener was willing to take into his garden any lad, also from the school, so that that is what you would take to be the function of the continuation school as distinct from the day school?—Yes, that is my point.

10252. With regard to the supposed deterioration in private gardeners, did you happen to notice the collection of vegetables from the Duke of Portland's gardens at the recent Temple Show?—Yes.

10253. Have you ever seen any better vegetables at this time of the year than those?—They were very fine. I should be sorry to say there was any deterioration in vegetable growing for exhibition, and I certainly have not said so.

10254. I did not hear the remark, but I gathered from what Lord Barnard said, and Mr. Latham after, that you had rather implied that the private gardener has not advanced?—He has not advanced, I think, in fruit growing.

10255. And that he was directing a little more attention to orchid growing and specialising?—I think I should adhere to that, that on the whole his fruit growing has not improved. There is certainly more specialising, notably in orchids.

10256. Take the late Lord Cork's gardener, Mr. Iggulden; you may know him by name?—I do.

10257. Would you consider him a skilled gardener?—Yes.

10258. A man capable of giving excellent instruction in this sort of subject of which we have been speaking—grading and packing?—Yes, he has been engaged in market work for a great many years.

10259. I have been to see him, and have seen his methods, and he does his work remarkably well. Where do you give instruction in Kent in grading and packing?—At the College at Wye.

10260. Do you not give any at Swanley?—I am not connected with Swanley, I do not know whether it is dealt with there;—I have no connection with the College, I do not lecture at the College.

10261. It is taught there. The difficulty, you will agree with me, in an educational establishment like that is the waste of produce involved in teaching grading and packing?—Yes.

10262. That is what prevents its being done extensively?—There must be a certain amount of wastage, of course.

10263. It is very difficult for these educational places to make both ends meet, and wastage must be prevented?—Yes.

10264. With regard to this question of foreign produce, do not you think it is almost entirely a question of co-operation?—It is, very largely. I think that our home growers could do a great deal more if they worked together.

10265. The blame which is thrown on the railway companies far more rightly ought to fall on the individual producer?—I think the producer is certainly very much wanting in not doing what should naturally fall to his share to do.

10266. Combination and undertaking to deliver large quantities, and at regulated times?—Yes, I think there is a good deal in that.

10267. Have you visited the winter schools of horticulture in Holland?—No. I have read about them.

10268. Their methods are excellent, and they are enabled to sell fruit in London when it is rotting on the ground in Kent, and, as you know, in Holland they have no better climate, or not so good a climate as you have in Kent. I wish you would bring this question of co-operation constantly before your people when you do have these lectures, because I am convinced, now we are talking so much of small holdings, that the whole success of the small holding movement will depend on combination and co-operation?—I quite agree with you, it will.

10269. The training of the gardener, the cultivation of the ground, the grading and the marketing of the

Mr. W. P.
Wright.
20 June, 1907

produce and co-operation are the four necessary conditions, are not they?—All are very important and essential to small holders.

10270. Yes, unless we can get them, small holdings cannot succeed only in isolated cases?—Probably.

10271. (*By Lord Barnard.*) You have in Kent a large urban population, such as in the towns round the Medway and on the coast?—Yes.

10272. So that I suppose there is an excellent market in the county for garden produce?—Yes, and particularly in the holiday season. There are a good many market gardens now in the Isle of Thanet, for instance, feeding Ramsgate, Margate and Deal, and at Folkestone and Hythe—my own district—feeding Folkestone.

10273. You have not mentioned the subject of the examinations of the Royal Horticultural Society. Is not that Society doing a great deal for the improvement even of private gardeners?—I am not at all satisfied with the examinations of the Royal Horticultural Society, because they are not practical examinations.

10274. Perhaps they want to train theoretical men more?—Many have thought, for some years past, that they should examine them in practical work. If you go through the list of candidates for those examinations you will find them nearly all connected with training colleges; the private gardener does not go in for them.

10275. The men they examine are practically all those men who are going to be teachers?—They are principally college students of both sexes.

10276. Teachers must be trained somewhere—provision must be made for the training of teachers?—Certainly. I should not say the examinations are of no use, only they miss out a very important class.

10277. You do not think they are of much advantage to the private gardener?—No; very little, as a rule. I think the private gardener does not go in for them

because he has not sufficient dexterity with his pen to keep pace with the college students.

10278. You do not imply that the private gardener is non-intelligent?—No; on the contrary, I think their work makes gardeners reflective, and I think, if they had the advantages of the college-trained student, we should get some very valuable men from amongst them; but, as a class, they have not much scientific knowledge and insufficient general education.

10279. A good many private gardeners in England are Scotch people?—Yes, a great many.

10280. Does not the working Scotchman educate himself to a very much greater extent than the south-country man?—Yes; I was going to say that is the reason why the Scotch gardener gets an advantage over the English gardener. He has a better general education.

10281. Do you know anything of the Botanic Society at Edinburgh?—I know the gardens well; they form a good station for ornamental plants and botany, but not for fruit farming and market gardening.

10282. That has been supported by public money?—I believe so.

10283. Do not a good many gardeners go there and get scientific instruction, and then pass some examination?—I should say there would be a certain number that do so.

10284. Have we anything corresponding with that in England?—We have the Royal Botanic Gardens at Kew.

10285. There is no examination there, is there, and no certificates given?—No, but a young man has an opportunity of observing and improving himself.

10286. Where there is no examination and certificate you have to take a man at his own valuation?—Quite so.

TWENTY-FIRST DAY.

Tuesday, 25th June, 1907.

PRESENT :

The Lord BARNARD (*in the Chair*).

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. W. J. GRANT, called and examined.

Mr. W. J.
Grant.
25 June, 1907

10287. (*By Lord Barnard.*) Will you kindly state to the Committee the title of the office you hold?—I am Director of Agricultural Education for the County of Monmouth.

10288. You have held that office since when?—I was appointed on July 1st, 1891.

10289. Under whose direction do you work?—In the early days, of course, I worked under the direction of the Technical Instruction Committee, or at least the Agricultural Committee, who reported in the usual way to the County Council. At present my Committee is one part from the Education Committee and one part nominated by the Chamber of Agriculture, so that farmers and those in the agricultural interest may have a fair representation on the Agricultural Committee.

10290. It is a committee of the County Council I take it?—A committee of the Educational Department, that is a committee of the County Council; it is a committee of the Educational Department with five co-opted members from the Chamber of Agriculture.

10291. Does that committee report to the Education Committee?—As a matter of fact we have to report to the Education Committee.

10292. Who manages the finance? I suppose you control the accounts?—Yes; previous to the commencement of each year I have to prepare a budget, that is confirmed by my Committee and then submitted to the Finance Committee and passed, and my Committee are justified in spending up to that amount whatever it may be.

10293. What was the amount originally allocated to agricultural education by the local authority?—£1,000 exactly.

10294. You have prepared a table showing the expenditure upon agricultural education from the year 1891 to the year 1906?—Yes, I have placed before you the figures.

10295. So that you need not read them through?—No; you have those in full. I might, perhaps, say that at the close of the old scheme of the old committee by the time the Education Act of 1902 was adopted rather more than

Mr. W. J.
Grant.
25 June, 1907

£2,000 stood to the credit of the agricultural side. I pointed out as forcibly as I could that we had been justified in spending all that we had spent, that we had not spent a brass farthing that we were not justified in expending, and the result was that a recommendation was made that we should be given credit for that amount. That, in a measure, has justified us in the increased expenditure that is going on now.

10296. I see that up to the year 1905 your expenditure on this particular subject continued to increase slightly each year?—That is so.

10297. For the year ending March 31st, 1906, there was a slight decrease?—Yes.

10298. Is that the commencement of a decrease which will continue, do you think?—No, it will not continue. The reason for that decrease is that in that particular year our sales were exceptionally good, and we had rather more cider to dispose of from our cider school, and that we received more than we had done the previous year. The sales were greater that year, so practically speaking the amounts that you see are the amounts expended with the sales deducted.

10299. I understand; they are the net cost to the ratepayers?—Yes, the net cost to the public.

10300. You have given us a long list of the work now being done. I do not think I will ask you to read all those, but perhaps you might like to say a word on some of them. In the first place you have a dairy school?—Yes. The dairy school I have given you full particulars of because really and truly that was the first work that we commenced, and you are also given at the end of the statement the actual cost of the dairy school and the cheese school for the last three years; we consider that is worked very economically.

10301. What fees do the students pay?—Those who can afford to pay pay 10s.; those who cannot afford to pay, and who the local representative or my Committee consider are justified in receiving free instruction, they receive it free precisely on the same footing as those who pay. The fees are used for the purpose of giving prizes for each class of ten students, 15s., 10s., and 5s. to the students who come out best. That is an examination by an outside examiner, and at the close of the year gold, silver, and bronze medals are competed for. Those are paid for out of the fees we receive.

10302. Do you find that interest in the dairy school is maintained?—I think the figures we give you speak for themselves.

10303. There is no falling off in number?—No; it is the other way about.

10304. The students do not all come up for examination?—No.

10305. Most of them do?—Yes, the majority come up. Perhaps I should explain also that we make it a standing rule that any student who does not put in the full number of attendances will not be examined, and then sometimes a case of illness or one thing and another will happen that prevents a student from being examined.

10306. You have some visitors to these classes?—Yes.

10307. Do they pay a fee?—No.

10308. They are simply allowed to come and look on?—Yes, we very much like to have them.

10309. In your printed report you make some mention about giving instruction to girls at elementary schools in dairying?—We have done that for some few years. I am afraid that at first, perhaps, it was not altogether legal for us to do so, but we find it has proved thoroughly satisfactory. The girls who attend our classes from the elementary schools receive their instruction free, and, subject to notice having been sent to H.M. Inspector and the gentleman responsible for elementary education in the county, their attendances at the dairy school count as attendances at the elementary school and make no difference whatever as to the grant that they earn at school. The result has been thoroughly satisfactory throughout. Some of the girls whom we have had have not only won scholarships for the cheese school, but one or two of them, I believe, have won the gold medal of the county.

10310. I suppose the instruction in the elementary school is only of an elementary character?—We do not give the instruction at the school.

10311. I mean to the elementary school children?—They go through the same course as the others. We have been inspected once or twice by the Board of Education. I think they were a little bit sceptical about it at first, but

we rather convinced them of the value of the work that was being done and we venture to recommend that the course we have adopted should be carried out in every county in England, Scotland and Wales; it gives those children a practical lesson. If they are the daughters of farmers or small occupiers they get an early training that will be useful to them in their own homes; if, on the other hand, they are the daughters or children of those that are so poor that it will necessitate their going into service they are of much more use, and they obtain better situations than they otherwise would do. That I have had ample proof of, and I think we may practically say that either myself or my staff know every family in the county of Monmouth and we are thoroughly acquainted with those who are worth looking after and who are likely to be of use and credit hereafter, and it enables us to help them on when they leave the school.

10312. Is this dairy instruction in the time table for those schools?—No, it is not. There is a reason for that. I must say that the inspector is in entire sympathy with what we are doing, he understands me and I understand him, so much so that if any of the masters or mistresses are inclined to be restive, and they refuse to let their scholars come, they get a very polite reminder that they ought to come, and we get the children.

10313. The girls I understand are not selected, a whole standard is taken. Is that so?—As a rule either our instructress or myself or the correspondent or the clergyman of the parish know the girls who ought to come, and we take them—those that are old enough and strong enough.

10314. You do not adopt this system in any other subject except dairying, do you?—Yes, we get the girls in the evening for the poultry classes. Of course that is independent of the teaching in the school, but they always come for the poultry classes in the evening. We get the boys also for the lectures given by the veterinary surgeon in the evening, that is boys from 14 and upwards. Then I have taken the older boys from the schools in the district where I have been myself giving a demonstration in the planting and pruning of young fruit trees. The boys attend and probably after seeing one tree planted they will plant the remainder themselves, and possibly root prune and top prune one or two trees and then write an essay the following day on what they have done. These essays are submitted to me and I correct them and send them back. They are not retained at the school, but go from the schools to the parents of the children, and that is useful in creating interest in the instruction given. Then in addition classes are held for fruit packing.

10315. They are not quite on the same footing as the dairy instruction inasmuch as they are not given in the school time?—Yes, the work in the orchard is given in school time, and the work in hedging and basket making which we do is also given in school time.

10316. (By Mr. Latham.) What do you mean by school time?—School begins at nine in the morning.

10317. Is that your own school?—I am speaking of the elementary schools in the county.

10318. Does that not interfere with the curriculum of the school?—No. Notice is given and they attend twelve days for basket making and the attendance at these classes is reckoned as attendance at school. If it is hedging they attend for the same time, and that is reckoned as attendance at school also.

10319. (By Lord Barnard.) These girls who attend these classes are eligible for these prizes of which you have told us?—Yes—you are alluding to the girls at the dairy school.

10320. No, I was referring to the girls from the elementary schools?—The girls from the elementary schools are taught upon precisely the same conditions as those who come from other sources and pay. It is always arranged that they are examined in a separate class by themselves. If they gain not less than 80 marks they get their certificate of proficiency, and the best girl who gets the highest number of marks gets a prize, and so with the second and third.

10321. Every student who gets over 80 per cent. of marks gets a certificate?—That is so.

10322. You also give dairy school demonstrations?—Yes.

10323. What is the object of those?—The instructress will give a demonstration at the opening of the school to give outsiders an opportunity of seeing what is done and the way in which the pupils are being taught. During the time the dairy school is in that district she will also

Mr. W. J.
Grant.
25 June, 1907

give one or two demonstrations with a separator, showing the value of the use of a separator as compared with skimming.

10324. Is it largely to stimulate interest in the classes ?—No ; it is more for the purpose of giving instruction ; the interest, I think, is well maintained. In the early days we had to stimulate interest, but now it is not necessary for us to do anything in the way of creating interest, that object having been already attained.

10325. You also give lectures at the dairy school ?—Yes.

10326. Are there any other subjects in connection with the dairy school which you would like to mention ?—I think the questions your lordship has put to me have made it perfectly clear as to what has been done.

10327. Then we will go to the cheese school. You also have a cheese school ?—Yes.

10328. Is that something on the same lines as the dairy school ?—The cheese school has been going on since 1895, and each year that school is held in a different farm in a different portion of the county. The county of Monmouth, as possibly you are aware, is rather of a varied character as to pasturage and soil. Caerphilly cheese is made in almost every portion of the county. Some portions of the county are very much better adapted for cheese-making than others, but my Committee thought, and wisely, I think, that it should be shown to the people that it was possible to make good cheese in almost every part of the county. For that reason we take a different farm for the cheese school every year. The arrangement we make is that my Committee shall receive the whole of the milk produced upon the farm, and in order that our receiving the milk for the use of the school shall not in any way interfere with the usual dairy customers or business of the farm, if they require so many pounds of butter, so many soft cheeses, so many pounds of Caerphilly cheese or Wensleydale cheese as it may be for their own customers that is supplied to them from the cheese school. It is made entirely by the instructress and those who are taught. The result has been thoroughly satisfactory in every way. In every instance where the cheese school has been there has been an increased demand for produce from that farm. The prices have always been of the best and I need not say that they have adopted the principles that have been taught there. In addition to that our instructress gives one evening every week what might be termed a public demonstration or object lesson in cheese making ; that is very well attended.

10329. What is the length of the course in the cheese-making school ?—Three months ; we do the migratory work and the cheese school work with one teacher.

10330. Do you know whether the fact of so many people in the county of Monmouthshire having passed through these schools has at all affected the price of their produce afterwards ?—Yes it makes this difference that those who have attended the cheese school never get less than 6d. a pound for their cheese, whereas those who have not have frequently had to be content with 42s. to 45s. per cwt., while the others have got 56s. per cwt., and butter 1s. 4d. to 1s. 6d. per lb.

10331. You have a large mining industry in Monmouthshire ?—Yes.

10332. So that there is always a good market ?—Quite so.

10333. You have some scholarships for the cheese school ?—Yes, ten scholarships are competed for every year for one month's free instruction at the cheese school.

10334. I understood you to say that the course was three months ?—The cheese school lasts for three months.

10335. When I asked you what the length of the course was I was referring to the length of the course of instruction in the cheese school ?—I beg your pardon—the course of instruction for each student is one month. Sometimes we get a student there for three months, but that will be a student who will be paying for two months out of the three. The scholarships only extend for four weeks because we consider, and it is an acknowledged fact, that Caerphilly cheese-making can be taught thoroughly and completely in one month's instruction ; that includes milking the cows and the principles of both cheese making and dairy management—all through the whole of the curriculum.

10336. I am afraid I do not know anything about Caerphilly cheese. Is it sold in London at all ?—I tried to get one or two firms in London to take up the sale of it, but they did not take to it very kindly ; they seemed to consider it rather a tasteless cheese. But those who know Caerphilly cheese and who have been used to it like it very

much indeed. It is one of the most digestible cheeses made. I may say that Caerphilly cheese last December was making 70s. a cwt. when only a month old, so that rather shows it is not a cheese to be despised.

10337. At any rate you have got a good market for it in your county ?—We have a good market for it, and it is a cheese that pays best in Monmouth. Monmouth is a county of small farmers and small occupiers comparatively speaking, and it is our duty to lay ourselves out for the mode of instruction which will be most advantageous to them.

10338. Will you tell us whether the same remark applies to Wensleydale ?—With regard to Wensleydale our dairy-teacher was the first person to make Wensleydale cheese in Monmouthshire. I may say my Committee sent her to Wensleydale to learn the principles there. The chief object for making Wensleydale or for recommending the making of Wensleydale is this, that Cheddar cheese-making is not altogether as satisfactory and profitable as it might be perhaps in the Cheddar country, and they have taken very largely to making Caerphilly. This Caerphilly is considered by some to be an excellent cheese, although some of us may have our doubts about it. The Somerset Caerphillies are very often not whole-milk cheeses at all—those they exhibit are, but the bulk of them are not. They make butter and they make Caerphilly cheese as well, and the advantage is that in their large dairies they are able to put down half a ton of Caerphillies of all one type. That is an advantage they have, and that very materially affects the price of Caerphillies during June, July, and part of August. Now during that period we recommend our people instead of making Caerphillies to make Wensleydale, and if they do so, instead of their milk realising to them 5½d. a gallon, it will be far more likely to earn 10d. That is the reason why Wensleydale is made.

10339. Where is the market for the Wensleydale ?—All the Wensleydales produced in Monmouthshire can be sold now three or four times over. I frequently have to get Wensleydale for my friends from Wensleydale.

10340. (By Mr. Latham.) What is about the length of time it takes to teach them to make Wensleydale ?—They generally contrive to get through the Wensleydale and to know a good deal about it in a month. A certain quantity of cheese will be made when they come to the cheese school, and a certain quantity will have been made just before they come, so that they will have an opportunity of seeing the different stages. I ought to have mentioned in regard to those schools that in addition to the work taught or the instruction given at the dairy and cheese schools we have had a good many really poor people to deal with, and our instructress goes to their dairies and teaches them how to make the most of the old-fashioned utensils they have got in order that they will be able to produce just as good butter, or rather better butter and better cheese in their own dairies than is being done at the dairy school itself.

10341. That is exactly what I wanted to draw from you.—That has been taken up well, and I can assure you that that had a great deal to do in the old days with breaking down what we thought insurmountable difficulties, or shall I say obstructions, that we met with when our work commenced.

10342. (By Lord Barnard.) Perhaps now that you have touched upon that question you might tell the Committee generally—you have already referred to it—what the attitude of the agriculturist in the county of Monmouth is towards this instruction ?—When I began some 16 years ago, and even when I had been at it for some few years I often wished that I had never touched it, I will admit that. It was rather near heart-breaking, and I suppose if I had not been a Highlander I might have thrown it up ; but their feeling to-day is very different : we have appealed to their minds, I say it with all seriousness, through their pockets. Those who have received instruction, both their sons and daughters and themselves have realised that it has been of an economic and commercial value to them ; they are able to make more of their dairy produce and more of their fruit and the general output from their farms.

10343. Is it your opinion that the continuation of this work and an expansion of it, if possible, would meet with the approval of the ratepayers of the county ?—Yes, it would.

10344. Now I will just run very briefly over these other items of instruction that you give. You have competitive examinations in milking for which I see by your printed report you have a considerable number of entries every year ?—That is so.

Mr. W. J.
Grant.

25 June, 1907

10345. In looking at the list I see you dealt with more men than women. Is milking usually done by men in the county of Monmouth?—Both men and women. Alluding to that, it might interest your lordship and the Committee to know that one of our girl students who gained the gold medal in the open competition at the Bath and West of England meeting at Newport was first in the butter making competitions, and was also first in the open class for milking. Her sister, who won the bronze medal, was third in her class for milking. The girl who was first in the girls' class for butter making was first in the girls' class for milking.

10346. What is the teacher, Mr. Gibbons?—He is the examiner; the teaching is practically given by our dairy cheese school instructress. She is not only qualified but she is an excellent milker herself.

10347. Do you give a certificate to everybody who passes in the case of milking too?—Yes.

10348. You have given us the numbers who come up for those examinations?—I have.

10349. They are probably people who have been through the dairy school or the cheese school?—Yes.

10350. So that some of the dairy and cheese school pupils go in for the competitive examinations in milking?—That is so.

10351. Where do the students live?—We make it a *sine qua non* that those who attend the cheese school must live in the house.

10352. Are your farmhouses in Monmouthshire so large, then?—That is one of the difficulties we have to contend with. They are not as a rule very large, and I have to select for the committee such a place as I would send my own daughter or my sister to. I always bear that in mind, and there is a rigid system of inspection. The practice has always been that it is clearly and distinctly understood that from the day the cheese school commences till the day it closes they never know when they may expect me down, whether at breakfast time, dinner time or tea time, to see that everything is in proper order or otherwise, and we have never had any difficulty in that way. They never know when they may expect me.

10353. What is about the expense to the students?—The amount we pay weekly for each student is 15s., that is for board and lodging; washing they have to provide for themselves. We also pay for the conveyance of the students to and from the stations; the instruction, of course, is free.

10354. Does that come out of the County Council fund?—It comes out of the grant. Everything that is spent is shown in the figures before you, and those figures are audited; they are taken from the auditor's accounts.

10355. No questions of discipline arise?—They never have done, and of course if anything did arise in that way the students would have to go home immediately.

10356. You also give a fortnight's instruction to young men and lads in hedging?—Yes, that would be not only to the sons of farmers and the employees on a farm but to the boys I alluded to also from the elementary schools.

10357. Do you think that has a good effect?—Certainly. I may tell you that when I went to Monmouth 15 or 16 years ago you might have only found in the county perhaps 25 competent hedgers, whereas I can find you 100 to-day. At that time I could only get three men in the whole county who were competent to give instruction in hedging; there were men who knew how to hedge, but I could not get more than three men who were competent to give instruction in it, and we should have no difficulty in finding a dozen or more to do so now.

10358. Something of the same kind is done with regard to sheep shearing?—Yes; notwithstanding what has been said about shearing by machinery you will see from the figures that I have given that shearing by hand still holds its own. In certain parts of the lowlands shearing by machinery may be taken up, but in the hill district and with hill sheep machine shearing does not answer.

10359. Are the flocks large usually in the county?—They vary very much—from 250 in the lowlands to as many as 700 or 800 or perhaps 1,000 head in the hills.

10360. I suppose the introduction of shearing by machinery is only a question of time and money?—Yes. I think in the lowlands for the heavier sheep—close wool sheep and the long wool sheep, too, it is possible that shearing by machinery may come in.

10361. Until sheep shearing by machinery becomes common in the county you think it is your duty to have

these classes, and your experience is that they are appreciated?—Certainly—when the number of attendances does not decrease.

10362. (By Mr. Latham.) Are these two men, Mr. Rees and Mr. Edwards, practical men?—Yes. Mr. Rees was a farmer, but at the same time I think he has, perhaps, won as many prizes for hedging as any man in the county; he is a thorough practical man, and he is our basket instructor also. Mr. Sidney Edwards I can say the same of as a shearer. They are both men who are thoroughly competent to teach, and men who are held in very high respect by everyone who knows them in the county, and at the same time they are workers in the truest meaning of the term.

10363. (By Lord Barnard.) I suppose the horse shoeing instruction and examination is something on the same lines, is it not?—Yes; that has been going on for something like 13 years, I think, and I can only say—I believe Mr. Latham has some knowledge as to whether the Monmouthshire men are any use or not—that perhaps the shoeing smiths in Monmouthshire have won more prizes at open competitions at great gatherings than smiths in any other county in England. Any shoeing smith who has practically anything like a decent business is a first-class prize winner. We offer each year at Lord Tredegar's show a prize which is only open to first prize winners, and we have always 20 or 30 men down to compete, although year after year the man who gets the prize is left out. The shoeing classes have proved most satisfactory and they will be continued.

10364. I see they include light horses and hunters as well as heavy horses?—Yes. I may say every shoeing smith of any account in Monmouthshire is a registered man, and that he has trained his apprentice to the best of his ability to beat his neighbour's apprentice, so that they shall get our prize and ultimately be examined by our examiner, Mr. Storrar, for registration.

10365. Does the old practice of apprenticeship still exist in Monmouthshire in regard to shoeing?—To a certain extent it does in the country, but not so much in the hills; still it is an understood thing that if a young fellow goes to a smithy he remains for four or five years, and they always like to keep a man until he has been through our classes and has got a certificate from us.

10366. Is your instructor, Mr. Storrar, a practical man?—He is a Fellow of the Royal College of Veterinary Surgeons and a recognised examiner. We have done practically all the teaching in Monmouthshire without actually having had to employ a shoeing smith to teach the men.

10367. (By Mr. Latham.) Who has taught them then?—They all have to come up to a certain standard to satisfy Mr. Storrar before they will be examined, and their masters teach them, after which they come up year after year till the pass for registration by the Worshipful Company of Farriers has been obtained.

10368. (By Lord Barnard.) In fact you have a high standard of shoeing in your county?—We have, and we consider it is entirely due to the work that Mr. Storrar has done.

10369. Then you give instruction in cider and perry making; are you associated with the Cider Institute?—Yes, unfortunately I am; I happen to be honorary secretary. I can only say we are very proud of the Institute. We believe it is doing work that is entirely original, and I think there is a great future for the work that will be done from there.

10370. You state here that a considerable amount of advice as to the management, bottling and after-management of cider has been given; how is that given?—That alludes to Monmouthshire; that is from our own cider school.

10371. That is a distinct thing?—Yes. Monmouthshire is really the only county in Britain that possesses a cider school of its own, and it is of quite an older date than the Institute itself. The way we manage is this: at a certain farm in a certain district where there is an orchard and the owner wants instruction as to how to make the best of his vintage fruit, postcards and invitations are sent out to all his neighbours within four or five miles to attend, and Mr. Wootton attends and gives a lecture on the grading of fruit. Later on he takes a certain proportion of the fruit and crushes that fruit at our own mill. We have a complete travelling mill and plant of our own, and later he will attend for the purpose of racking, and later on for bottling. A certain portion will remain in wood and a certain portion will be bottled, and the farmer has an

Mr. W. J.
Grant.
25 June, 1907

opportunity of comparing the cider which is made by my Committee's instructor and the cider which is made by himself. I need not tell you which is the best. The result is that in Monmouthshire the maximum price for cider at one time was 8d., and that is now the minimum price. We get 1s. 3d. a gallon for cider that we send to Scotland for bottling. We do the whole of the work right through at various farms, and each year we give prizes at our annual gathering for cider.

10372. I do not know that I need go quite so thoroughly into all these items; is poultry on the same lines?—Yes, poultry is much on the same lines.

10373. And bees?—In the same way.

10374. Sterilising and bottling fruit?—That is very much on the increase, and I may say that last year the amount bottled could have been sold four or five times over.

10375. I see the next item you have is basket making. Do you consider that an agricultural operation?—Most certainly. Where there is a farm, or where there is a garden, or where there is an orchard, baskets are a necessity, either for carrying weeds or for carrying produce or for carrying fruit or roots when cut for the animals.

10376. They are made of willow, are they not?—The baskets that your lordship is alluding to particularly are not made of willow. They are made of wood that is within the reach and that can be obtained by everybody in the county of Monmouth. If our instructor, Mr. Rees, restricted himself to using willows, then it would be a question of buying the material, but any small farmer in the county would be a very poor fellow if he could not find his way to a spinney or a hedge and cut sufficient hazel and split it to make baskets with. The men who have attended the hedging classes have an opportunity of receiving instruction in basket making when we cannot lay hedges, and the lads who attend the hedging classes from the schools have an opportunity of doing the same. I can assure you that the baskets that were made by the boys last year—not by the men, but by the lads—realised at our annual gathering, to be sold again, 24s. a dozen.

10377. (By Mr. Latham.) These baskets are baskets that are quite peculiar to your county?—They are what are called coracle baskets; they are peculiar, but they are most useful.

10378. The large majority of baskets are made from willows, but these baskets that you make are made from the growth in the county?—Yes. Of course willow baskets could be made in the same way. These coracle baskets are also made with handles across for carrying them by.

10379. (By Lord Barnard.) Has it always been the practice to make these baskets, and are you simply trying to extend it, or did you create the idea?—We created the idea.

10380. Do you claim that you are assisting the farmer pecuniarily in enabling him to make his own baskets?—Most certainly we do.

10381. You give lectures on agricultural subjects at a reformatory farm school?—Yes, those were lectures given by myself personally.

10382. I am familiar with one industrial farm school in the north. I suppose the work is done by the boys very largely?—Yes.

10383. Under their own teachers and masters?—That is so. I utilised it very much in the earlier days as a centre. The great principle I adopted there was to give the lads an opportunity of understanding the principles that underlay their practical work—the reasons for doing the things they did.

10384. Did farmers attend the lectures at the reformatory farm school?—No, that was for the advantage of the lads there and the officials only.

10385. Do you know as a matter of fact whether those lads go on to farms after they leave the school?—I am very glad to be able to say that if the lads were left alone and allowed to follow their own will their inclination would not be to go back to the homes from whence they came, but the difficulty we had to contend with was that their parents knew that if the lads behaved well while at the school they had a certain amount of money due to them when they left, and they used to want to get hold of them in order to get advantage of the good conduct money that the boys were entitled to. That is the great difficulty we have to contend with, but the lads from the reformatory school have on the whole done well, either in the army, or wherever else they may have gone. Many of the lads that I have been able to place in situations in the country have given entire

satisfaction. I may say I have employed boys from there myself, and I have been very well satisfied indeed with their behaviour.

10386. Of course the only point that this Committee is interested in with regard to this particular branch, is as to whether the instruction which you give at that school has the result of planting on the land either labourers or perhaps eventually small farmers, who otherwise would not be there—more or less skilled men. Is the expenditure justified do you think by the result?—Yes, I do. I may say that I have fought that out with the Local Government auditor for a good many years, and I have always been able to beat him on that point, and the Local Government Board have admitted it. I say without the slightest reservation that perhaps the best work I have ever done in my life has been at the reformatory farm school at Little Mill.

10387. (By Mr. Latham.) May I ask you what the demonstrations were that you gave?—At Little Mill?

10388. Anywhere—you say "Lectures and demonstrations"—what are the demonstrations?—Fruit planting and pruning—you are alluding to the demonstrations given by myself?

10389. Yes.—That would be planting and pruning of fruit trees.

10390. That is horticulture?—Yes.

10391. (By Lord Barnard.) Do you give any lectures and demonstrations in agriculture?—Yes.

10392. At the school?—Yes. All the agricultural lectures that have been given hitherto in Monmouthshire have been done by myself.

10393. You are sole instructor at the school?—Yes. The work I have done there has been to deal as thoroughly and as completely as I possibly could with both agriculture and horticultural subjects.

10394. (By Mr. Latham.) Just tell us what the demonstrations are in agriculture?—At Little Mill?

10395. Yes.—Supposing the boys are turning over a compost heap, I deal with the compost heap, its constituents and where they came from. Similarly, if they are doing draining, I also deal with the drains; why they are necessary, how the drains should be laid; and if they are ploughing I want to know why they plough at a certain depth; and if they are ploughing a fallow or forming a furrow on a stubble, the difference between the two, the soil and the crops that ought to follow. If it is a case of planting potatoes or lifting potatoes, I deal with that in the same way. If it is the case of a potato crop that they are lifting, the reason why they are able to take the time of lifting as being the time to select the seed for another year's planting; storing the seed, storing the potatoes, and so on, is explained; and if I happen to be there at the time of milking, I want the cows milked in my own way—and I show them the right and the wrong way. I also explain as far as possible, for instance, the constituents of inorganic and organic soils, dressing the foot of a sheep, and planting a gap with young quick.

10396. (By Lord Barnard.) You also give inspection and advice upon the planting and selection of trees for shelter, forest, and ornamental purposes?—I do.

10397. Do the owners of land take much interest in that?—Yes. I have to give advice on forestry and ornamental tree planting, and the planting of orchards and so forth every year.

10398. Mr. Storrar, of whom we have already heard, gives lectures on veterinary science?—Yes.

10399. That is elementary veterinary science, I suppose?—Yes.

10400. On the hygiene of farm animals?—Yes.

10401. Those lectures are well attended?—Very well attended.

10402. You have also carried out some pasture experiments?—Yes.

10403. Are those upon private property?—Yes.

10404. How long have those experimental plots been carried on?—For 12 years or more.

10405. Will those be continued?—Yes, they will be continued.

10406. I see you have also, under the instruction of your Committee, undertaken to carry out some experiments in the cultivation of sugar beet?—Yes.

10407. And also in potatoes?—Yes.

10408. Are potatoes much grown in Monmouthshire?—Not so much grown as they should be considering that it is a great consuming county.

10409. You keep yourselves in touch with horticultural associations and societies?—Every horticultural and agricultural society in the county.

10410. You know what they are doing, and attend their shows, and so on?—I do—practically speaking, with the exception of about two small societies in the county we have to do with every horticultural and agricultural society in the county.

10411. I daresay you and your staff find it a good thing to go about to these societies—you get to know the people and they get to know you?—Yes; we get to know the people; we do not wait for them to come to us, we go to them.

10412. May I ask you with regard to the finance how do your Committee feel their position with regard to that?—My Committee feel that they would like to do even considerably more than we are doing, but the objection, and the natural objection, is that if they do it means an increased rate. We have gone just about as far as we can go. As I have indicated, there is a greater demand for assistance and work than we are able to supply; we have not got the supply, and what is felt by Agricultural Committees, especially in the county in which I have the advantage of working, is that the work they have succeeded in doing justifies the money that has been expended upon it, and that the time has come when some other provision ought to be made for the extension of that work. I venture to suggest that if in each county a committee of the County Council was created to act in conjunction with the Board of Agriculture and Fisheries for the purpose of carrying out agricultural education, the administration of the Fertilizers, Diseases of Animals and other Acts that may or shall affect the industry of agriculture, such a committee, if assisted with sufficient funds, would be the proper authority to both carry out agricultural education and administer the Acts referred to with effect and economy.

10412a

10413. (*By Mr. Latham.*) Do you mean that to be all under the county council—do you mean to work with or under the county council?—Yes.

10414. (*By Lord Barnard.*) You do not mean that this should be an independent local authority?—No; not an independent local authority: it should be a committee of the local authority, not independent. I am strongly of opinion that the detail work in connection with agricultural education should be carried out by a committee in each county through a staff responsible to that committee for the work entrusted to their charge. I have arrived at this conclusion from what I have seen in various counties I have visited, either as an examiner or otherwise, in England, Ireland, Scotland, and Wales. I am simply giving an expression of the opinion of those who are interested in the welfare of agriculture and agricultural education in the county in which I am working.

10415. You have spoken about having had experience in other counties; you will tell us whether that opinion is limited to your county solely or whether that is being considered elsewhere?—That is being considered elsewhere, and I may say from men I have spoken to in other counties that they think in the same direction as myself. I say with a certain amount of satisfaction that some of us at least have justified what we are doing, and that the time has come when the good work we have been endeavouring to do should be extended considerably. Our object is—and I am sure it is the object of everyone whose heart and soul is in the work—to do it in such a way that it shall best serve the interests of those who are gaining their livelihood on the soil, and to do our level best to keep those who have been reared upon the soil in the country where they are wanted. That is one reason why I speak so feelingly about Little Mill, where after I had been dealing with the boys there for some time they got a liking for the country, got to know something about the country, and wished to remain there instead of drifting back into the towns from whence they came.

10416. I suppose a great many of those lads did come from the towns?—Yes, many of them did, and they wished after a time to remain in the country.

10417. Your view shortly is this, that it would be very desirable if in every county one committee of the County Council had under its jurisdiction all the powers, duties, and liabilities which bring it into contact with the Board of Agriculture?—I do, most definitely.

10418. You also are of opinion that that committee, although administering perhaps funds drawn through the

agency of the Board of Agriculture as the central authority in London, should have the appointment of the staff, that the staff, in other words, should not be appointed in London or controlled in London?—I think that if the Board of Agriculture is contributing, as I hope they will, towards the funds of agricultural education that they ought to have some voice in the appointment of the officers who are carrying out the work in the counties. I think that it would be an advantage to the committees if the counties were to have the advice and the assistance of the Board. The Board of Agriculture are, as we all know, in touch and sympathy with the industry of agriculture throughout the whole of the country; they know everybody; they know what is being done in different parts of the country, they know what has been done and what can be done with advantage and disadvantage, and they also ought to know, and I believe they do know, what might be taken up with advantage in some counties that are not doing perhaps as much as they ought to do.

10419. From a national point of view do you consider that it is desirable that that sympathy and that interest which you have just mentioned exists between the Board of Agriculture and the practical agriculturists should be strengthened and drawn closer?—It would be of great advantage to the well-being of agriculture in the country if it were, and I say this for our county that if we were only assisted to-morrow by the amount of £50 from the Board of Agriculture it would be appreciated so very much that for every £50 that came through such a source the county would willingly give £50 more. You see we had to fight at first, and that is the reason I worked so economically in the early days; people used to grumble considerably about the rates, and I used to say: "The most of the money that we have to spend comes from the 'whisky money,' and if it is a halfpenny rate that comes from you, if you do not get the value of that halfpenny you are fools, it is your own fault"; and if they could realise that the work I have been doing for many years was appreciated by the Government through the Board of Agriculture it would arouse the very fine feeling which I have been striving to create permanently.

10420. You have no grant at all at present?—None whatever—first and foremost, the Board of Agriculture legally in our present state of affairs could not give it to us.

10421. You think you ought to have a grant?—Yes, I do; I think we are justified in asking for it.

10422. If money from national funds is given for the purpose of promoting higher agricultural education I suppose you would not object to the work done in each county being treated as part of a whole national system?—No.

10423. And subject more or less to the guidance and supervision of the Board of Agriculture. By supervision I do not mean interference, but advice and so on?—We should not be justified in objecting to that.

10424. (*By Mr. Latham.*) Taking this paper which you are good enough to send frequently to me, and of which I fully approve, I should like to know if you are successful in teaching all these several subjects and what you would propose to do to assist any of your population who would like to get a more scientific knowledge of agriculture. Are you attached to any of those collegiate centres marked on the map?—No, we are not.

10425. Will you just give us your own idea with regard to this very important question?—I take it your question really means that you would like me to state what I think ought to be done in Monmouthshire with regard to those whom we would consider some of our best and most promising students at present, considering that we have not got an agricultural school of our own, and that we are not attached to any of the colleges?

10426. Yes, that is so.—As you will see in the last sentence I put here I say I am strongly of opinion that the internal work of each county ought to be done by a staff in that county who are responsible. One point of view in holding that is this, that it gives myself and my staff an opportunity of coming into contact with everybody and knowing everything about everybody; it gives us an opportunity of sifting people and finding out those who are worth going on further with. Why we have been unable to give any scholarships up to the present is that we have not had the money or the means of doing so; but what I should like to be able to do as long as we had not an agricultural school of our own would be to select the young fellows whom we consider are worth training and worth going further and send them to a first rate agricultural college for further training with a

*Mr. W. J.
Grant.*

25 June, 1907

Mr. W. J.
Grant.
25 June, 1907

scientific bearing. The practical agricultural training that is of most value to a farmer's son is the practical training that he gets on a first rate farm that is being made to pay, but for a scientific training he must go to a place like Leeds, or Newcastle, or Edinburgh, or one of those centres where he will get a scientific training of a very high standard.

10427. Or Reading, which is closer to you ?—Or Reading.

10428. (*By Mr. Medd.*) Or Cirencester, which is closer than either ?—Yes, I quite agree.

10429. (*By Mr. Latham.*) You expressed the opinion that it was very desirable that all farmers should be fully equipped with the best knowledge of practical agriculture. You do not wish us to understand that there is not much in science as regards agriculture ?—A successful agriculturist must of necessity be thoroughly conversant with science as applied to agriculture.

10430. Although you are not attached to any of these several colleges you would have no objection and would offer no opposition should you have the opportunity of being so attached ?—I think the simplest answer I can give to the whole question is that the plan I should like to see adopted is the plan I have carried out with my only boy. Perhaps I have not put it as clearly as I might have done. What I am doing with my own boy is this: I am giving him the best agricultural training that I possibly can by sending him to the best farm and the best dairy I believe to be in the kingdom, hoping that ultimately he will get his B.Sc. at Edinburgh.

10431. One of your strongest arguments in coming before us to-day is to show us that with a greater assistance from the Treasury you could do a very great deal more work ?—We could.

10432. And part of that work would in all probability be scientific education ?—That is so.

10433. I see as a matter of fact you are having a great deal more money that you used to have ?—We are spending more money, but the "whisky money" is decreasing.

10434. Where do you get this money from ?—From an increased rate. Previous to the adoption of the 1902 Act the money that we had came from a halfpenny rate; now there is a 2d. rate for the higher education rate. Previous to the adoption of the 1902 Education Act there was a halfpenny rate for technical instruction in the county, but since then there has been a 2d. rate for higher education, which embraces agricultural education as well.

10435. That I think shows conclusively that this county is doing what very few other counties are doing, that is, assisting agriculture through their rates ?—Yes, and that is why I tried to say pointedly we are doing just as much as we can, and we cannot go any further than we have done. We feel it a hardship on the people.

10436. (*By Mr. Davies.*) Mr. Latham has already asked you with regard to the scientific part of your training, and as you are no doubt aware nearly all the agricultural colleges who have sent representatives to give evidence here are affiliated to some centre, usually a university centre ?—Yes.

10437. I understand that you contend that these people who give agricultural instruction in a county should be under the County Council, and not under any university or college authority ?—I do. That is, I feel very strongly that each county should be able to carry out its own internal work by a staff responsible to themselves for the work which is being done.

10438. But supposing such a body was anxious to come under a particular college, you would not be prepared to become responsible for the staff and become really one of the staff upon that college ?—That would be to the advantage of the college, but I question very much if it would be to the advantage of the county.

10439. Not that you would give up your residence in the county ?—No, but I do not know that that would be altogether to the county's advantage. I am speaking generally. I am not speaking of any one college in particular, but the very definite impression that I have formed is this, that where the agricultural colleges, or where the universities may be of advantage to the counties, would be for the purpose of sending young fellows there to be taught the scientific work that could not be done in the counties. I want you to understand clearly that I am not speaking of any one particular college, but that is the conclusion I have arrived at by taking stock of what is being done throughout the country.

10440. That is the view you have expressed already, I

believe ?—Yes, that is the view I hold. Now where there is more money spent, and where perhaps the best work is being done is in Lancashire. More money is spent upon agricultural education in Lancashire than in any other county in the kingdom. I have examined there, and any man whom I have passed anything like decently, I have always found has within 18 months taken his B.Sc. at Edinburgh. Do not imagine for a moment that I am deprecating in the slightest degree the work of the colleges, but I am speaking now with regard to the internal work of the counties.

10441. But you would admit, would not you, that if you were on the staff of the particular college, you would get great advantage from being closely in touch with the higher work that was being done at one of these college centres ?—Yes, that may be so.

10442. And it would prevent you getting into a groove of your own, perhaps ?—You cannot hold your own to-day unless you move on, and we have to move on with the rest.

10443. Then you told the Committee about the classes in the elementary schools, and is it also a fact that nearly all the elementary schools have mining classes as well ?—No, the mining classes are arranged in connection with the higher education, which used to have an industrial side for the technical work. They were evening schools independent of the other teaching. As far as I am aware I do not think that is so in Monmouthshire.

10444. Have you got any evening schools in Monmouthshire ?—Yes.

10445. How far does your agricultural teaching come under them there ?—I have personally nothing to do with the evening schools. There is a fair sprinkling of farmers' sons who go to the intermediate schools in Monmouthshire, but, strange to say, with the exception of certain parts of the county, few of the farmers' sons who go to the intermediate schools remain farmers. They generally go to the iron works, coal mines or to business.

10446. Is that due to the kind of instruction they get ?—I think it is due to the fact that having gone to the intermediate schools after leaving the elementary, they prefer going to engineering or trade in preference to taking up agriculture.

10447. I think you told the Committee you held classes in the evening in various centres for farmers' sons and labourers' sons who had left the elementary schools; is that so ?—All the classes that we hold in the evenings are available for those who have left school, as well as older people, and the older lads who have left school invariably attend those classes.

10448. For how long does the course last ?—Six weeks.

10449. In each centre ?—Six weeks in each centre.

10450. Do you find that there is much difficulty in getting the boys to attend if they have to travel long distances ?—We always arrange the classes in such a way as to avoid the trouble of travelling long distances. Invariably our attendances are very satisfactory indeed.

10451. Then those classes would form the basis of ordinary scholarships, would they, for higher centres ?—No, we have not sufficient funds to give scholarships.

10452. But if you had ?—If we had, then we should arrange a subsidiary course and form scholarships.

10453. And those classes would answer that purpose, would they ?—If the classes you are alluding to would not answer that purpose, then classes would be arranged to justify examination for scholarships.

10454. Are you aware that at Cardiff College they have already initiated classes for farmers' sons ?—I am.

10455. Have any of your men who are farmers' sons in Monmouthshire gone to take advantage of that ?—I do not know. A few may have from the Maesycwmmmer district, but that I am not sure of.

10456. Do any of your students go on to Reading to complete their courses there ?—No, so far they have not.

10457. Then none of the farmers on their own account who have got scholarships from the County Council have sent their sons outside the county ?—No, they have not.

10458. You are paid by the county, are you not ?—We were, and now by the Education Committee. The County Council are independent so far.

10459. In your general work as supervisor of agricultural education in the county, do you give problems connected with agriculture, especially with regard to

co-operation, and that sort of thing?—With regard to co-operation I have not done so.

10460. You do not consider it is part of your work?—By co-operation you mean co-operation in regard to purchasing and selling, do you?

10461. Yes.—I do not consider it is part of my work.

10462. Do you investigate problems like beet growing, and that sort of thing?—Yes, I do, and, as I have already indicated, any information or any advice required upon matters agricultural or horticultural, or forestry, I have to give. I have to inspect and report upon those matters.

10463. I think you told the Committee that one of your most pressing needs now was to have scholarships to enable your best and brightest pupils to go on to the university colleges?—It would be certainly an advantage if we had means at our disposal for sending some of our brightest and smartest lads to be educated there.

10464. Have you made any provision for an agricultural library in the county?—Yes, there is an agricultural library in connection with my department, and any farmers' sons who require standard works on agriculture or horticulture can get those works on application. They have a very useful little library also in connection with the cheese school.

10465. Do you find that farmers' sons make use of that?—Not to the extent that I would like.

10466. There is still room for improvement there?—Yes.

10467. (*By Mr. Acland.*) When you said that the boys who attended intermediate schools did not as a rule return to be farmers, for what counties were you speaking? Were you speaking for Monmouthshire or Wales generally?—No, only for portions of the county in which I am living—portions of Monmouthshire, that is.

10468. You were not speaking as regards Wales generally?—No, I am only speaking of the county in which I am living.

10469. And you limit it to portions of the county?—Yes, to a portion of that county.

10470. Are there other portions of Monmouthshire where intermediate students do become farmers afterwards?—There are portions of the county in which they come to these schools in which they are almost entirely the sons of farmers, and where they are likely to remain such; but of those in the immediate neighbourhood of Newport, and those further up the hills, who come down to the intermediate schools, very few of those, even if they are sons of farmers, stick to it.

10471. (*By Mr. Medd.*) Will you kindly tell me how many of the classes mentioned on this paper the elementary school children go to? Which are the classes and the subjects?—Referring to 1906 there is the working dairy school, hedging classes, sheep shearing, and basket making. That would be in the day-time.

10472. Will you complete the list?—Those that I have given to you are classes that have been attended by boys or girls in the day during school hours. Then the Board of Education recognises the giving of instruction in orchards as well.

(*After a short adjournment.*)

10473. You were kindly telling me the classes attended by children from your elementary schools, and I think we had arrived at basket making?—I gave you those that were attended in the day time.

10474. That is during school hours?—Yes. There is also sheep shearing for the boys during the day.

10475. You gave us hedging, sheep shearing, and basket making?—Then I might say that the boys attended the demonstrations and classes that I gave myself in the orchards and gardens during the day as well. That would come under fruit culture.

10476. Are they earning specific grants from the Board of Education for this purpose?—No, they are not.

10477. You have not made any application, have you?—We have not sought to do so. But they have attended those classes, and their attendance at our classes has been recognised as attendance at school in part, so that it has not interfered with the curriculum or caused any friction whatever.

10478. Then with regard to the other classes attended

by the elementary school children, which are they?—They would come up to the poultry classes in the evening, and also to the veterinary lectures given by Mr. Storrar. I think that would be about all.

10479. Then are elementary day school scholars attending classes held in the evening?—Yes.

10480. Are they registered as evening school scholars?—No; we do not do that, because you have to have everything fair and square above board. Our idea in that matter is that those classes should be generally held at the school, and the school master or school mistress, as the case may be, is written to and asked to inform the children so that they may have an opportunity of attending. But I want it to be clearly understood that those children are not requested to attend simply for the purpose of filling up our numbers, and I make it a point that when my visits are made I go to check the attendance, and I also like to notice that there are practically the same children that I have seen on the previous occasions attending. So that we are gradually and quietly but at the same time surely attaining our purpose.

10481. Then have you ever considered the question as to the advisability of inducing any scholars attending at a day school to attend an evening school?—An evening school of what kind?

10482. Of any kind. In other words, do you think it advisable to attempt to persuade by any means children who are compelled to be five hours at school in the day to go to any sort of school at night?—I think they get enough of it during the day. It would be too much of it sometimes.

10483. Do you have continuation classes, that is, what are called ordinary Government continuation classes, in any of these subjects?—No.

10484. Then you are earning grants from the Board of Education for none of this instruction?—In my department we are not earning any money from the Board of Education.

10485. Then have you any Agricultural Education Committee in Monmouthshire?—Yes.

10486. There is a Committee of the County Council, is there?—Yes. Might I explain that my Committee is composed now of 14 members—there are nine members from the Education Committee and five are co-opted from the Chamber of Agriculture. That is so that the agriculture of the county shall be thoroughly and completely represented; and may I assume that our agricultural education is complimented by the Education Committee when they allow my Committee to co-opt five while only three are co-opted by the Education Committee.

10487. I only ask the question because I do not quite understand yet what you mean by the Committee forming in each county to act in conjunction with the Board of Agriculture?—That would be a new committee—a new creation altogether.

10488. But it would be carrying on, would it not, the work of the existing Agricultural Education Committee?—It would.

10489. It would supplant it?—It would be the same committee as far as we are concerned practically, under another name.

10490. (*By Lord Barnard.*) It would be the same committee with a new constitution?—The same committee with a new constitution—I think that is the right way to put it. Mind you, as far as analyses are concerned I do very nearly as much in the way of analysis as the county officers do. As I had some few years ago to suspect that the barley meal that was being sold in the county was not quite what it was represented to be, the same day I had samples of barley meal taken up in every town in the county where it was sold and dealt with.

10491. (*By Mr. Medd.*) Then this committee would be independent of the County Council?—We would have to report to the County Council.

10492. In any case you would desire or approve of the suggestion that these local bodies, by whatever name you call them, should submit annually to the Board of Agriculture a well-defined scheme of the work they intend to engage upon during the entire year?—That is to say, to put it briefly, assuming that my Committee is the new committee, or a committee with the powers indicated by Lord Barnard, that we should submit to the Board of Agriculture each year a scheme of the work we are doing?

Mr. W. J.
Grant.
25 June, 1907

10493. Yes.—Yes.

10494. Of the work to be done ?—Yes.

10495. For approval and suggestions ?—Yes, for approval and suggestions.

10496. Now your work of course I know very well in Monmouthshire, and how excellent it is, but its great difficulty is that you have no permanent institution of an agricultural character. You have no intermediate school of agriculture, or advanced school of agriculture ?—We have not. If it were not for the great number of intermediate schools that have been created the money would have been forthcoming for the agricultural school, but that has been absorbed.

10497. You have exactly hit the mark. There is no money available for capital expenditure upon either intermediate or advanced colleges. You cannot find the money ?—Not for agriculture.

10498. Then the only way to overcome the difficulty is by adjoining counties co-operating and grouping themselves round some intermediate school or some advanced school, so that the best pupils from the counties can go for scientific instruction to the particular institution ?—That is not the position at present.

10499. That is what you would desire, because to-day you have not got it ?—We have not at present got an agricultural school, although we hope to have one.

10500. Nor are you grouped with any other county ?—No.

10501. It would be very desirable that that white area on that map there should be covered with institutions, or that institutions should be available for that purpose ?—It would be desirable, as at Cirencester.

10502. You are not affiliated ?—No, and I think if Cirencester was placed in the position, that it ought to be, financially with regard to agricultural education, we could use Cirencester with advantage.

10503. That is what I have felt ; that with regard to the higher branches of scientific instruction, it would be greatly to your advantage to be in combination with Gloucestershire in such a way as to enable your best pupils to go to Cirencester for instruction ?—It would be an advantage undoubtedly.

10504. Because you cannot to-day maintain and support an institution of that type yourself, and have not got the capital for that ?—No. I venture to think that unless we had sufficient and adequate funds at our disposal it would be suicidal to start it.

10505. If you had such an institution as Cirencester available, it would be an equal pity not to use it ?—Absolutely so.

10506. Then you will agree with me very likely that if possible we should get Monmouthshire, Gloucestershire possibly, Herefordshire and Somersetshire grouped round Cirencester for the purpose of higher agricultural education, like the rest of the map which is grouped round these centres. It would be a great advantage ?—It would be a great advantage to these counties.

10507. (By Lord Barnard.) You did not refer at any length to the subject of forestry, but since speaking to you I have been looking at the Board of Agriculture's publication, and I find that you have a very considerable proportion of the area of your county under wood ?—We have in the county.

10508. A larger proportion than a great many other counties ?—That is so.

10509. Ninety-two acres per 1,000 ?—Yes, that is so.

10510. You have a very considerable area of wood, therefore ?—Yes.

10511. Are there very many men employed in those woods ?—The woods in Monmouthshire are mostly what you would term coppices. I have been digging and

digging away since I have been there endeavouring to get something done in the way of forestry, and I have made very little of it as yet. Some years ago I surveyed a fairly good-sized colliery property in the hills and I advised them as to what to plant, when to plant, and how to plant, and gave an estimate of the cost and everything else ; but that was the beginning and the end of it. It went no further, but I think I may say this much, that if we had the means at our disposal even now we should make an attempt to do something in the way of experimental planting with regard to forestry. A great many thousand pounds are spent every year in pit wood in Monmouthshire, and a great many thousand pounds worth of pit wood might be grown in the county if we could only persuade the people to begin. There are many thousands of acres of hill land where it might be done with advantage.

10512. Amongst the many subjects connected with manual processes in which you give instruction there has been instruction of that kind, has there ?—Yes, and I give advice more or less each year as to the planting of woods, and I have advised as to the trees and so on.

10513. Is there any instruction given as to measuring timber ?—No ; that I have not touched.

10514. (By Mr. Acland.) Is there any demand for technical education for foresters, or people who want to become foresters on big estates ?—Not in Monmouthshire yet, but the time is coming when foresters will have to be provided and trained in forestry.

10515. (By Lord Barnard.) You know what is being done in regard to agriculture in that respect ?—Yes.

10516. And you think that should be taken up in your county ?—Yes. Then there is one other matter that I did not allude to in my evidence generally with regard to assistance to horticultural and agricultural societies. In addition to either myself or members of the staff judging stock or produce, or whatever it may be that is exhibited, we make a point as far as possible to offer prizes for butter, poultry, cheese, eggs, fruit, potatoes and so forth at those gatherings, that have been produced by those who have attended our classes, with a view of encouraging them to continue the production of the best articles, and also to keep the articles that they produce continually before the public, and we find the money spent in that direction has had a very very good effect indeed. My Committee are responsible for an increased production of fruit in Monmouthshire, and I may say we have improved the packing of fruit and other produce very much in the county, so as to induce the people to put everything they have to offer before the public in the most tasteful manner possible.

10517. Could you furnish the Secretary of the Committee with a little more information as to the finances of the County Council ? The money which you have stated to-day you have spent does not represent more than the charges on the rates or on the public funds ?—The money that you see indicated there is the money that has been actually spent each year.

10518. But you have spent more than that, I gather, only you recouped yourselves some of it by fees and sales ?—The money that is indicated there to the best of my belief is the money that has been expended, less the amount received from sales and fees.

10519. Now what I should like you to inform the Secretary of this Committee on is the total amount that you have expended in the last three or four years on agricultural instruction. You may put on the other side if you like anything that you get back ?—That I will do with pleasure, but I cannot do it from memory. If I may say so, the figures that I have here are taken from the audited accounts by my clerk, and I have every reason to believe they are absolutely correct.

10520. That is the net expenditure ?—Yes.

10521. What I should like you to put before the Committee is what the total expenditure is ?—For that matter if you wished it, I could have given you the actual cost for everything in connection with the classes, but I thought I should weary you with detail (see p. 387).

The Witness forwarded to the Secretary a statement which may be summarised as follows :—

STATEMENT SHOWING THE RECEIPTS AND EXPENDITURE OF THE MONMOUTHSHIRE AGRICULTURAL EDUCATION COMMITTEE FROM JULY, 1891, TO MARCH 31st, 1906.

Mr. W. J.
Grant.
25 June, 1907

PERIOD.	RECEIPTS.				EXPENDITURE.
	Amount Allocated.	Fees.*	Sales.	Interest.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Four years ending March 31st, 1894 ..	4,000 0 0	72 2 6	103 12 5	54 0 0	2,259 19 11
Four years ending March 31st, 1898 ..	4,000 0 0	134 17 0	691 2 6	51 0 0	3,815 14 11
Four years ending March 31st, 1902 ..	4,000 0 0	82 5 0	577 13 1	111 0 0	4,632 17 0
1902-1903	1,000 0 0	20 15 0	188 17 2	24 0 0	1,584 0 6
1903-1904	—	20 15 0	226 19 11	—	1,900 14 3
1904-1905	—	11 10 0	154 7 0	—	1,938 16 7
1905-1906	—	22 2 6	198 19 5	—	1,724 15 9
Total	13,000 0 0	364 7 0	2,141 11 6	240 0 0	17,857 18 11
Average	812 10 0	22 15 5	133 17 0	15 0 0	1,116 2 5

* No fees are charged except those of the dairy school and some, but not all, of the shoeing classes, but where an entrance fee, not exceeding 2s. 6d., is required at a shoeing class, these fees are paid to the local committees towards the cost incurred by them in making the necessary arrangements for the competitive examinations.

The HON. CHIEF JOHN A. COCKBURN, K.C.M.G., called and examined.

10522. (By Lord Barnard.) I think you know the terms of the reference to this Committee?—I have read them.

10523. You, I understand, have been Minister of Agriculture in one of our great Colonies?—Yes, for many years I organised the Department of Agriculture in South Australia.

10524. You were Premier at one time?—Yes.

10525. Are you Agent-General now?—No, but I was for three years.

10526. It would be of great value to the Committee if you could give your opinion very generally on the subject which is referred to them by the light of what took place within your knowledge in South Australia?—We are chiefly interested in seeing that everything is done in the way of inculcating the principles of the science of agriculture in the minds of agriculturists and of the public. The science of agriculture is of primary importance to all Australian colonies. Early steps were taken in every grade of education to teach agriculture. Of course some mistakes were made. For instance, we started by introducing a text book into the schools. But I do not know whether you wish to know what took place in regard to the primary schools.

10527. We are not considering that, but if you consider it essential to any point in connection with agricultural education I should be sorry to stop you?—If the foundation of it is not laid in the primary schools it is difficult to connect it on later. Briefly I will say what was done in the primary schools.

10528. You are aware, I dare say, of the sentiment which has become very prevalent in this country at the present day in the rural districts, that if you are to keep the rural classes in the rural districts you must give them what has been described as a rural bias in the elementary schools?—Precisely. And that is our feeling too, in Australia, because there we have city crowding very much intensified, as all the characteristics of the race are intensified in the Britains beyond the sea, and it is partly to give that bias or bent towards country life that we are very solicitous to commence in the plastic years; but the first step taken was a wrong one, as I say. We attempted to teach agriculture by means of text books. Very soon after I became Minister of Education I endeavoured to introduce some practical information with regard to the soil generally. The first step I took was to introduce an Arbor Day, which has had some effect in Australia in fostering an interest in the land. I introduced Arbor Day in 1886, soon after it was started in the United States. Then an Order in Council was passed which provided that all country schools in future were to have a certain number of acres reserved around them for school gardens; then we

gave special inducements to teachers to teach practical agriculture, and in many of the schools throughout Australia the children are taught practical agriculture on the ground around the schools. This is done under the title of manual training. In Queensland all the manual training in the schools practically takes the form of practical agriculture. In South Australia the greatest latitude is allowed to the teacher in that respect, and he may teach woodwork or ironwork, or carpentry, or some of the forms of agriculture, and many of the schools do take up practical agriculture and perform quite an extensive series of operations. They go so far as to hybridise wheat, and to find out the best forms for the particular locality. Then there are the Government experts in Australia. We have a number of experts in the various staple industries, in agriculture, and viticulture, and fruit culture generally, and these experts visit the primary schools. In New South Wales there is an instructor in agriculture whose special duty it is to visit these schools and give instruction to the teachers as to the best method of giving practical lessons in agriculture and managing school gardens and so forth. Then we have agricultural colleges and high technical schools, but our school age terminates some two years or so before the age of admission into these technical schools, so I endeavoured to bridge over that gap by establishing secondary agricultural schools in South Australia, the chief feature of which was that only half the time of the school day was to be devoted to class-room work, and the other half was to be devoted to field work and work in the garden, and in the workshop, and in the laboratory. I am sorry to say that system did not extend so much as I expected. It has not been prosecuted with any great degree of vigour since I left South Australia; but the school that I started in Adelaide is flourishing and is used as a preparatory school for the School of Mines and Industries on the one hand, and for the Agricultural College on the other. The boys go there from the age of 13 to 15 and get a thoroughly good practical education, with a certain amount of literary education as well. But the focus of the school is in agriculture and in the workshop, and not in the class room. Then, of course, we have our agricultural colleges. Most of the States have agricultural colleges. I do not know whether you would care to know the typical curriculum in one of these colleges, or whether it is a matter that goes without saying all over the world.

10529. Perhaps you would give us that briefly.—The curriculum at Hawkesbury, in New South Wales, which is a very large and successful agricultural college, is agriculture, agricultural chemistry, botany, meteorology, entomology, engineering, bacteriology, surveying, applied mechanics, book-keeping, veterinary work, horticulture, dairy work, carpentry, blacksmithing, sheep and wool, poultry, live stock, pig raising, curing, &c. Most of our

Sir J.
Cockburn.

10528b

10528c

10528a

Sir J.
Cockburn.
25 June, 1907.

10529a

colleges have a similar curriculum, taking up a number of subjects. The departments in the agricultural college in South Australia are agriculture, horticulture, viticulture, and dairying, and in connection with the College there is a model vineyard, and a model cellar, and wine is made there, not to be consumed on the premises, but to teach the students all the operations connected with wine making, which is one of the great industries in Australia. These colleges, as a rule, are affiliated to the universities, and degrees in agriculture are given now at several of the universities. In South Australia the degree of Bachelor of Science may be taken in agriculture, and in that case the students who aim in that direction spend two years at least at the agricultural college. Victoria also has just instituted a degree in agriculture. Of course there are scholarships that are given at the primary schools which are available at the secondary schools, and then there are scholarships at these latter schools which are available at the colleges.

10530. So that so far as agriculture goes it is complete ?
—Yes.

10531. An intelligent boy has every means of pursuing his education to the utmost extent of which he is capable ?—Yes. There is nothing technical that he cannot compass in that way. Nearly all these colleges are residential. They are in country districts, and most of the students are intramural. The average age of entrance is 16. The average fees are £30 a year including everything, with the exception of washing. In some schools medical attendance is also included.

10532. What class of people attend these colleges ? Are they people who have been brought up in the country more or less, or are they townspeople who wish to take to agriculture ?—It is rather difficult to get scholarships taken up in some of the country schools, but there is a fair number of boys from the cities.

10533. But the agricultural community are the principal people who take advantage of them, are they ?—Yes ; I think I am justified in saying that.

10534. Do those students who do not take the degree to which you refer pass an examination at the end of their course ?—Yes, they are required to do so.

10535. Do they get a certificate ?—They get a certificate, or they get the diploma of the college. But of course only a few go on to their degree. Those who go for the degree go to the college expressly to get the degree.

10536. Probably those who go for the degree would not become ordinary agriculturists or every day working agriculturists ?—No, they would not. Many of them would look forward to becoming experts. We employ a large number of experts ; because the State in Australia does not regard its functions as so strictly limited as in some countries, and we do not think it is beneath the dignity or the province of the Government to take any action which may be for the welfare of the community. Therefore, we do a good deal in the way of opening and developing channels in trade, and we have a number of Government experts who inspect the articles that are intended for export. We have a great variety of agricultural products for export, and therefore there are a number of positions available, and I think these graduates would rather aim at those, or at some special branch, such as viticulture or fruit-growing, rather than at the ordinary farmer's life.

10537. But the other boys who go through the secondary schools I suppose go on the land, do they not, to a certain extent, and become agriculturists and farmers ?—Yes, a fair number of them do, but we have the same trouble with the people in that respect as here.

10538. What amount of Government money is expended on those colleges ?—There are none of them self-supporting so far as education is concerned. They are self-supporting so far as their farming operations are concerned. The vote for the South Australian College is £5,000 a year. There are 70 students, and the fees amount to £1,750. So that there is the difference between £1,750 and £5,000, which is made up out of the general revenue. At Hawkesbury the fees amount to about £3,000. The Government subsidy is about £9,000 a year, and there are 200 students there. We do not consider that a fee of £30 pays expenses.

10539. Are those purely agricultural colleges, or are they for general instruction ?—No, those are agricultural colleges. Of course there are technical schools outside those, and they give a certain amount of instruction in agricultural subjects, such as wool grading and subjects of that sort.

10540. You do not know whether the instruction that

you give in these colleges and schools includes marketing produce in any way, do you ? For instance, there is a large export trade in agricultural produce in some parts of Australia, I suppose ?—Yes.

10541. Is there any commercial instruction given ?—Instruction is given in book-keeping as applicable to farming. There is a farming class, in which the students are taught all the various branches of knowledge which are useful to the farmer, but I am not aware whether any special stress is laid upon the marketing point.

10542. (By Mr. Latham.) You pay special attention to ensure that everything shall be pure, I take it ?—Yes. There is a rigid Government inspection for instance, the wine going from the export depot has to be certified as pure, and is examined for any adulteration. Adulterated articles would be immediately rejected, and we are very stringent in that matter. Then chemical manures that are sold by private firms are subject to analysis, and important ingredients, such as the amount of soluble ammonia and so forth have to be clearly stated.

10543. (By Lord Barnard.) Are the agricultural classes in South Australia satisfied with what the Government is doing on their behalf, or are they fairly satisfied, or are they pressing for further assistance ?—The Government is very much in the hands of the people in Australia, and the Government has at once to order itself according to the wishes of the people, so that the very fact that the Government is there proves that there is a fair degree of satisfaction on the part of the constituencies. Then in addition to the colleges there is a good deal done in the way of giving instruction to farmers. There are agricultural bureaux which disseminate all the latest information with regard to agriculture and send out particulars of all the newest varieties of wheat and seeds to farmers for trial.

10544. To the actual cultivating farmer ?—Yes, but only in samples of course. Then the experts, as I have said before, visit the centres. In Victoria an expert will go to an agricultural centre and take up his abode there for a month or six weeks, and during that time he will give lectures on his particular branch of study, and he will go round to the individual farmers. Any farmer, any viticulturist, or any fruit grower in Australia can practically have the services of the Government expert by writing to the Minister of Agriculture, who arranges that the next time the expert is in that neighbourhood he will go to the farm and advise as to the best means of combating a pest or discovering what may be wrong with a vineyard or orchard or flock, or anything of that sort.

10545. In South Australia is that all governed by the central Government, or does the local government take any part in it ?—It is all done practically by the central Government. There are local bureaux, but the expense comes out of the Treasury chest.

10546. As to the control of these local bureaux, are they controlled by the central Government or are they in the hands of the local centre ?—They are appointed or approved by the centre. Proposals have been made for a system by which they would be more representative of the locality—more elected by the people in the district themselves, but the matter was not taken up with the eagerness that I expected.

10547. Are there any other points that you wish to touch upon ?—No, I think not.

10548. (By Lord Moreton.) Will you tell us, as regards the elementary schools where there is agriculture taught, how the teachers are taught agriculture ?—That question reminds me of a difficult problem we had in the old days—who will teach the teachers ? I found it was more a theoretical than a practical difficulty. I instituted classes and got the Government experts on Saturdays and during the holidays to take classes of teachers, and they were taught how to prune and to bud, and all these various operations, and I was surprised at the facility with which men of general education who were eager in the matter would pick up quite sufficient information for them to be able to give the instruction necessary in the schools. I was quite surprised at it. After a very few practical demonstrations they really became quite efficient.

10549. (By Mr. Acland.) Will you tell us now, or let us know afterwards, the number of pupils now in the State colleges and the expense falling on the State for the maintenance of those colleges, so that we can see the sort of expense it is to the State per head of the pupils in the agricultural colleges ?—I can give you the figures for Hawkesbury in 1905. The number of students was 200,

Sir J.
Cockburn.
25 June, 1907.

the Government subsidy £9,232, and the fees £32 9s. for resident students; they include medical attendance in that case, and amount to £3,009. But I can furnish more detailed information on that subject afterwards, if desired.

10550. I thought if it would not be too much trouble to you it might be interesting to us to see what is the total expense, taking the colleges, which falls on the State per student?—That may be taken to be a fair sample which I have given. You would have to take the £3,009 from the £9,232 and divide by 200. That is for the year 1905.

10551. So that the State grant would be roughly £45 per student?—No; the students' fees have to be deducted.

10552. The total income is £9,232?—That is what the Government pays.

10553. What becomes of the fees?—They go towards the expenses.

10554. They go to the Government?—Yes. So that that leaves £6,000 to be divided by 200. That appears to be roughly about pound per pound on what the student pays. But I will check that by more extended figures. I think the South Australian College comes out somewhere near the same figure.

10555. (By Lord Moreton.) Can you give us any idea as to how many weeks of teaching the students get at the agricultural colleges? Would that be about the same as in England?—I do not think there are such long recesses as there are here. But I have not got that at the tip of my fingers. I could furnish information as to the length of college terms, if desired.

10556. It is as to how many weeks in the year they are taught?—I understand.

[Sir John Cockburn subsequently informed the Secretary that "in the Victorian Colleges there are two Sessions in the year, the first from about the second week in September to about the third week in January, the second from about the third week in February to about the first week in August. In South Australia there are three Sessions, viz., approximately—(1) Third Wednesday in April to third Friday in July. (2) Second Tuesday after close of first Session to second Friday in October. (3) Second Tuesday after the close of the second Session to the completion of the vintage."]

10557. (By Mr. Acland.) Have you come to any conclusion as to what is the best educational course for students going to these colleges. Should it include, for instance, ordinary secondary school education, or a secondary agricultural school education?—I have no belief in the curriculum of the secondary school except in so far as it is necessary for boys going on to the university standards.

10558. You do not account these colleges as on the level of universities?—The best secondary education is that where half the work is practical. I do not believe in a school which is limited to classroom work. I do not believe it does the best that can be done in developing even the general intelligence.

10559. By the expression "secondary school" I was not ruling out the school at which part of the curriculum should be practical. But when you said practical, did you mean definitely directed to agriculture, or practical in the general sense of manual instruction and so on?—Practical in a general sense—taking surveying, workshop instruction, practical chemistry and practical gardening.

10560. But do you believe in a different sort of secondary school training for those who are going on to these agricultural colleges than for people in town who may be going on or not going on?—Different from the ordinary secondary school, do you mean?

10561. Yes.—I do not think the ordinary secondary school in Australia, or elsewhere, on the usual stereotyped line is the best preparation for entrance to an agricultural college.

10562. You believe in isolating as a special class secondary education for those who are going in for higher education in agriculture?—No, I do not want to do that if it could be avoided, because I believe that the education which is the best for an agricultural life is also the best for any other form of practical life. But at present our secondary schools are dominated by the university standard, and if a pupil is going on to pass his degree and wants to take a scholarship, he must conform to the subjects that are set; unfortunately it seems to be difficult to get the schools to recognise the fact that that end could be served just as well if half the time of the school were given to practical life. Even for the abstract work which the university demands, I maintain that if half the time

is given to practical work, the progress in the more abstract studies would be as great or greater.

10563. Have you got a system in these schools suitable for persons going to pursue practical life, and subsidiary to these colleges?—No, not yet.

10564. But do you regard that as a very important thing, as tending to the success of the higher agricultural education?—Extremely important.

10565. Are you not rather working in the direction of getting general practical secondary schools?—When I left South Australia I had hoped to see these schools established on the model which I was speaking of, throughout the whole of the State, but so far that has not been done.

10566. Do you regard that deficiency of the general practical secondary education as a great deficiency?—Yes, very great. Some of the secondary schools are doing something in the way of remedy. They have manual training now in those schools, but I should not be satisfied till half the time is devoted to practical work.

10567. (By Mr. Latham.) I think you are convinced that there scarcely can be too much done for agriculture?—Certainly not in our community, because we depend practically for our existence as a country on agriculture.

10568. So far as you know of our own country, do you not think very much more could be done for agriculture than is being done?—I am inclined to think so. Our farmers manage to make a living although they send their produce 10,000 miles or more to market. If some of them had a few acres in some of the counties which are near this great market, they would not find it so difficult to make a living. If men only knew more of the best way to turn the soil to advantage, they could make farming very much more successful than they do.

10569. You have answered Mr. Acland on a point on which I myself feel very strongly as to practice being practically half the education. Do you think half is enough?—I say I am aiming at half. I think half a loaf is good enough at present.

10570. But if a man could have a little science and be thoroughly practical, do you not think that he would get a better living than if he were very scientific and not so practical?—Yes. If I had my way in education the class room would be merely the adjunct to the fields and workshop. The explanation of processes should be given after they had been witnessed by the student. There is then a desire to learn the reasons of any particular operation. A student has no interest in science or theory first without practice.

10571. Your Government is very strict with regard to all the adulterations of those products, and is strict in desiring that they should be free from adulteration, and that is carried out entirely by the State, is it not?—Yes.

10572. But the scientific part of that education has nothing whatever to do with a farmer's life, has it?—No.

10573. Now would it not be better if it had to do with it?—I do not quite follow the question.

10574. Supposing you could educate your farmers scientifically enough to be able to prevent adulteration, would it not be much better than that he should go to the State? Very few farmers are scientifically instructed enough to know what this adulteration means, especially alluding to your wines?—I do not think so far as adulteration of wines is concerned, it is an unconscious process. I am afraid it is sometimes done on purpose not by the farmers but by others; it is the Government's business to see that it is not done.

10575. But they cure rather than prevent?—Yes.

10576. What is the status of those farmers in Australia? What sort of man is the agriculturist there?—They are usually not the type of farmers common in England, or still more so in Scotland. The farmer as a rule in Australia is a man who, though he is well educated, and in many cases a man of culture, works hard himself manually. We have few farmers, as in the Lothians, who are really the governors of large domains, as it were, and have frequently only the superintendence themselves to do.

10577. They have not the time that our farmers have at their disposal for education, have they?—They work a great deal harder than the farmer does in this country.

10578. But if you do not get them tolerably young, there is not much use of their getting this education in after life?—No, there is not much opportunity afterwards.

10579. How late is the education possible in Australia?

Sir J.
Cockburn.
—
25 June, 1907
—

The farmer's son I have heard begins his work rather early. What do you say about that?—The boys begin their farming education, if they are the sons of farmers as soon as they begin to run about. They are learning something all the time they are out of school.

10580. About what age do they go to these colleges?—16 is the minimum age.

10581. How long are they kept there?—From 16 or 17 to 19 or 20.

10582. That means that they principally go in for the long course and not the short course of training?—The ordinary course is for two years.

10583. You really have no short courses such as we have had advocated in England?—Yes; that is just starting. I am glad you reminded me of that. They are starting the short courses in some of the States, where farmers can go for a few weeks or where farmer's wives can go for a few weeks to learn scientific and practical dairying. At Hawkesbury they have established winter schools for farmers for a course of four weeks, when there is less doing on the farm than usual. These schools are designed to assist men on the land who desire to increase their technical knowledge in agriculture and live stock, but who are unable to leave home for a more extensive course. The charge for the course is two guineas, board and lodging included. The railway fares are put at a single fare for the double journey. The course embraces a variety of subjects and those attending receive special attention on the subject they most desire to learn.

10584. Are they taken up?—Yes. They have been just started, and I was reading about them in a paper that arrived from Australia yesterday. This is a new departure, but I have not the least doubt from my knowledge of Australia, it will be very largely availed of.

10585. How far do you give your agriculturists the advantage of experiments?—There are experimental farms scattered throughout the country, which the farmers frequently visit, and in some of the States certain farmers are selected who are supplied with all the latest varieties of cereals and seed on condition that they will plant these in separate plots and cultivate them in the most approved style, and demonstrate to any of the farmers who choose to visit the land.

10586. Do they report back to the centre?—Yes.

10587. That is how their information is sown broadcast throughout the land, is it?—Yes.

10588. Do you get many farmers who will take it up?—Yes, I think very many are quite willing to do the work. They are asked to do it by the Agricultural Department.

10589. I think we may take it for granted that all the agricultural education given in Australia is valued?—Yes; undoubtedly these agricultural colleges are very popular. As a rule the vote is passed through the Estimates in the House of Assembly without much objection.

10590. (By Mr. Davis.) With regard to the colleges you told us about, can you tell the Committee very roughly what proportion of farmers' sons of any particular county or district attend these agricultural colleges?—No, I must get that information.

10591. Should you say roughly 50 per cent.?—No, I do not think it used to be as high as 50 per cent.

10592. Nothing like it?—No, I should not say 50 per cent. But I do not like to say. I do not know whether there are any statistics which deal with that subject, but I will make a note of it and let you know. The proportion has increased of late years.

[The witness afterwards wrote, "I have made enquiries from the most competent sources available, and I find that the proportion of farmers' sons at the agricultural colleges is estimated at about one-third in one case and about 50 per cent. in others."]

10593. You think public opinion, especially in agricultural areas, is setting in favour of the fact that farmers should send their sons for higher agricultural education to these colleges?—Yes, it is. There is an increasing feeling in that direction.

10594. Then I think you told the Committee that the agricultural colleges were affiliated to universities?—Yes, in many cases.

10595. In your opinion is it best that the agricultural college should be isolated in the particular county or district, or that it should be closely connected with, or, in fact be a department of the university college—that it should be really a department, or part and parcel of the university college?—None of the Colleges I have mentioned are in close proximity to the universities and I doubt if it would be well that they should be. I do not think I should favour their being merely departments managed by the ordinary university authorities. My experience of technical education is that it is better to have an independent management—that the university traditions do not seem to lend themselves to teaching technical subjects so well or so practically as the colleges erected specially for that purpose. The universities are or have been unfortunately rather given to theoretical courses, such as teaching applied mechanics in the classroom, and so on. I think they are very rapidly mending that, but still I should be sorry to see an agricultural college put directly under the management of a university authority.

10596. Or even partially being responsible to the county area or the particular district. As you will see from that map there, there are a great many agricultural colleges in this country which are connected with university colleges, and carried on partly by the county and partly by the university college?—I think that is very good indeed. The university element in the education would be very good I think if there were other elements in the administration. I think it is a great advantage to have a certain amount of university influence on the board of management.

10597. You think that they should be part and parcel of the university buildings, for instance in chemistry and botany and that sort of thing, or the scientific side generally?—Yes, so far as the purely science courses are concerned.

10598. And that the students should reside in the university and mix with the other men who do not go in for precisely the same work?—There is great advantage in that. There is general all-round growth with every branch of education in which students are brought into contact with other than those of their own speciality, but I would not like to place the technical colleges entirely under university control at present, although it is a great advantage to have a certain number of university men on the board of management.

Mr. P. ALLTOFT, called and examined

Mr. P. Alltoft.

10599. (By Lord Barnard.) You are, and have for many years been acting as instructor in manual processes; under what County Councils?—Lincolnshire and Wiltshire.

10600. But there are three administrative counties of Lincolnshire, which one is it?—East Lindsey.

10601. You have also since 1902 occupied a similar position under the County Council of Wiltshire, I believe?—Yes.

10602. Would you just tell the Committee what you were before you commenced this work of instructing?—An agricultural labourer.

10603. In Lincolnshire?—Yes.

10604. You had a special aptitude for certain manual processes of agricultural work?—Yes.

10605. Which one in particular?—I take it to be all of

them. I was taught the highest degree of all kinds of skilled agriculture.

10606. Where did you come from actually?—Tetney.

10607. Did you win prizes yourself for these processes?—Yes.

10608. Then the Lindsey Division of the county engaged you as an instructor?—Yes.

10609. How many classes do you hold and how long do your classes last?—About five days each.

10610. How long does each day last?—From 8 o'clock to 4 o'clock, as a rule.

10611. That is the working day?—Yes.

10612. We should like to know exactly the various subjects upon which you give instruction. Is hedging one of them?—Hedging and ditching.

Mr. P. Allott.
25 June. 1907

10613. Is that one?—That is two.
10614. That is there are separate classes for that?—We combine the two together.
10615. Now give another one?—Ploughing.
10616. And others?—Thatching, rick making, sheep shearing, under-draining and farm machinery. Those are the subjects that I teach.
10617. As a rule, what is the kind of number you have attending each class, who come to you for instruction?—It varies from six to ten.
10618. What is the maximum you could teach, do you think, successfully?—About eight—not more than eight.
10619. You ought not to have more than eight?—No.
10620. Taking hedging and ditching for instance, do you get some farmer or does the County Council get some farmer to let you go on to his farm?—Yes.
10621. Then do you actually do a bit of hedging yourself first, or how do you do it?—Yes.
10622. Then do you make the pupils do it after you?—Yes.
10623. And you tell them what they do wrong, I suppose?—Yes.
10624. And the same with the other classes I suppose?—Yes.
10625. Do you know from your own experience at all whether the results of what you have done is appreciated by the men?—I do know it.
10626. Do they tell you so themselves?—Yes.
10627. And do the farmers tell you so?—Yes.
10628. Do the farmers think the man is worth more after he has been through your hands than he was before?—Yes, and they give them more.
10629. Does what you have said now apply equally in Wiltshire and in Lincolnshire?—Yes, it applies in both counties.
10630. Do you find the customs of the country differ at all, as to hedges for instance?—Yes, very largely.
10631. Do you apply your Lincolnshire practice in Wiltshire?—Yes.
10632. And the farmers do not mind it?—No, they like it well.
10633. You have got your own views on the subject of how this can be further extended, have you?—Yes, I have.
10634. Would you tell me what you think of it and how it can be improved?—By appropriating a little more money.
10635. How would you expend that money if it were appropriated?—I should expend it in the same way as it is expended, in trying to teach the best processes.
10636. Do you mean by having more teachers?—No, I do not know about that, but I think there ought to be a Government grant given to them.
10637. But what should you do with the Government grant when you got it?—I should expend it in classes.
10638. Then the expense must be rather small, must it not, in organising the class?—I do not know that. We have always been short of money.
10639. How do you spend the money?—In giving them help. Up to the 1st of April each man for his services received 7s. 6d. if he has not got a county prize. There was a first prize given by the Agricultural Education Committee of Wiltshire of 25s., of 15s. for the second prize, and 7s. 6d. for the third, if the judges highly recommended it. Since the 1st of April the 7s. 6d. has been taken off, simply because they had no money. The general education rate takes up all the money.
10640. You have been on the land all your life, have you?—Yes, ever since I was born.
10641. Supposing for instance these classes were all stopped, and hedge making were to go back again, do you think it would be a very bad thing?—Yes, I do.
10642. Putting it the other way round, you think it is a good thing for the farmers and their men if the improvement of hedge making still goes on and is extended?—Yes.
10643. I fancy there are a good many bad hedgers in the country still, are there not?—Yes, there are. There is plenty of scope for more work.
10644. Have any of your former pupils become teachers?—Yes.
10645. I should think there is an opening for a great number of extra teachers, is not there?—Yes, there is quite as much scope for teachers to-day as before. There are a lot yet who have not got to know it.
10646. Do many men attend your under-draining classes?—Yes, they are very extensive, in Lincolnshire, particularly, but of course in the south of England it is going out to a very great extent.
10647. Draining is a very important subject all the same?—Yes, one of the most important subjects. One of the first things that I always look at on a farm is to see how the man's hedges are cut, and his drains, and whether he has got some good ditches.
10648. (*By Mr. Acland.*) What is the class that comes to you for these classes? Are they agricultural labourers?—Yes, and the waster as well sometimes.
10649. Do they come in order to get these prizes?—No, I do not think so.
10650. Do they come then because the farmers send them?—No, I do not think they do.
10651. They come of their own accord to improve themselves, do they?—Yes, I think so.
10652. How are those classes organised? Are notices sent round to the farmers, or how?—By bill-posting as a rule. There is a notice put up, on bills announcing that certain classes will be held in a certain district, provided pupils are forthcoming.
10653. Then do you go on the appointed day and see who turns up?—No, I do not go at all unless there is a class organised.
10654. Then there is some local person who gets the names?—Yes.
10655. Does he put this up on the bills: "Application to be made" to such and such a person?—Yes.
10656. I should like your opinion about thatching. One often hears that thatching as an art is dying out in the west of England?—Yes, it is very largely dying out.
10657. Do you think that is because other forms of covering houses are now cheaper, or because for one reason or other the skill has died out?—The skill, I believe, has died out.
10658. You think that thatching is still as good a means of covering as ever it was?—Yes, quite as good. I live in an old thatched cottage myself, and I would not exchange it for any mansion in England.
10659. You believe that thatching might be a good deal restored if only people were properly taught?—Yes, I do.
10660. (*By Mr. Latham.*) How did you get your education first of all?—From my father.
10661. Not from the person that employed you?—No; I got it from my father.
10662. Do you find that in England the farmers themselves cannot teach agricultural processes?—I am afraid there are a great many of the younger gentlemen who cannot.
10663. Can you tell me why that is?—Yes, I can, to a certain extent. I think it is because they get the theory part without the practice, whereas a man should always know the why and the wherefore before he can tell you the theory of a thing. I think that is where the mistake is made.
10664. How often do these classes take place?—I commenced in Wiltshire on the 1st of September last and I continued the classes till the 1st of March.
10665. I see in the official report that you are marked "partially employed"?—Yes.
10666. What do you do when you are not teaching?—I go upon the farm again to-morrow morning. I have no instructing work on at present, so I go back to work on the farm.
10667. In Wiltshire?—No, in Lincolnshire.
10668. Then you are not absolutely and entirely in Wiltshire?—No.
10669. What part of your time are you in Wiltshire?—All over the county I am part of my time.
10670. But what part of the time are you in Wiltshire at the present time?—I went on the 1st of September, and continued there till the 1st of March, and now I have just been back again for a fortnight. The first classes are in sheep shearing.
10671. That is why I asked you the question, because hedging and ditching is winter work?—Yes.

Mr. P. Allott. 10672. And sheep shearing and thatching is work for summer?—Yes, we take thatching, as a rule, from about August into September, and then we commence ploughing and go on with it, say, till December. Then I take up hedge cutting in January, February, and March, or under-draining, or whatever might take place during that time.

10673. What portion of the work of ploughing do you teach them in?—Both the theory and the practical part.

10674. But what part of the practical is it?—How to set the plough.

10675. What part of the practice of ploughing do you teach these agricultural labourers?—I teach them how to set the plough and how to use it when it is set.

10676. Are they so ignorant in Wiltshire that they have never yet learnt how to set a plough?—I should not like to say they are any more ignorant in Wiltshire than in any other part of the world, but there is an ignorant class of people to be found all over.

10677. We have had ploughing matches all over England for many years, and I thought ploughing was a thing pretty well understood by the agricultural labourer?—No, I do not think so. There is plenty of room yet to teach a man the different kinds of soils, and the depth he should plough in them, and how deep he should plough for certain crops, and all that kind of thing.

10678. Is it really a fact that our agriculturists are not able to teach their men that?—I am afraid a great many are not.

10679. Now, with regard to thatching, is there any disinclination on the part of the young men to thatch, or is it that they do not understand the business?—The fathers have not taught the sons for some time now. It is a matter for the agriculturists themselves. They think that if they teach anybody else they will take away their livelihood. There is a feeling of that description.

10680. But is it so bad as all that from father to son?—Yes, I am afraid it is from father to son to a very great extent.

10681. You say that after you teach these men you think they are able to earn better wages?—Yes.

10682. That is by taking up the business you are teaching them?—Yes.

10683. You do not make the father earn better wages?—No, I have never tried that. My experience is with younger people.

10684. That is to say you do not improve the business any more than that you make these young men earn better wages?—Yes, I think so. I think it makes the old ones more wide-awake, or they will lose their work.

10685. Is there any feeling against your teaching?—No, I have not heard of any.

10686. What machinery do you teach them?—Steam traction engine, ploughing engine, or threshing machines, or any kind of farm machinery except electric, which I do not know anything about.

10687. Do you teach them to take these machines to pieces and put them together again?—Yes.

10688. And repairs?—Yes.

10689. Are you a sheep shearers yourself?—Yes.

10690. And you can find people coming to you to be taught sheep shearing?—Yes, I had 10 in my last class.

10691. What ages were they?—Varying from 19 to 24.

10692. Had they been previously shearers?—Never sheared before.

10693. Then we may take, I suppose, that by instituting these sheep shearing classes you made 10 extra shearers?—Yes. Of course if there are no extra shearers coming in they keep dying out. In Wiltshire they take on one after two or three years, and give them a certain portion of what he has earned, but not possibly all he has earned, and by doing so they do not get them to join very readily, as in years gone by.

10694. That is very unfair to the workman, is it not?—Yes.

10695. That is not exactly the fault of the actual business of sheep shearing so much as that the man does not get all he earns?—No, I do not think he does, and, therefore, they do not care to take it up.

10696. But that is a very unusual thing really, is it not?—No, I do not think so. I find it very prevalent.

10697. It is quite a new experience to me to find that

there is any part sharing in profits if these men are shearing in gangs?—Yes, there is.

10698. Are not they paid so much the score?—Yes, they shear at so much the score. But if you are a practitioner, that is to say, if you are a perfect shearer you would not want to give your next door friend so much who was not so good.

10699. Supposing the men cut the wool of 20 sheep I could understand your argument, but if one did 18 and another 20 sheep, one would have 18s. and the other 20s.?—No, they only give them so much out of the gang a day. It matters little what quantity they do.

10700. Then the ganger, I take it for granted, takes the shearing, and has all the money in his own pocket, and hires these men at a certain wage, and they receive the money from him?—No, I do not mean to say that.

10701. Then I do not understand you quite?—My meaning is this; provided there are eight or ten in a gang, which there is about as a rule, if they have got to take on a new hand because an old one dies sometimes, they will possibly give that one 2s. 6d. a day out of the gang, and the others will share the remainder amongst themselves.

10702. I can understand that, because if a man is a new hand he will scarcely expect to keep up with old ones in all probability, and 2s. 6d. would be all he would earn?—Yes, it might be so in the first year, but John in the course of years gets better than Jack, and the old man does not want to suffer or take less. He wants to take the same as John.

10703. But that man gets to be a better man and receives his due reward?—Yes, but still I see no equality about that.

10704. But it is after all only a matter of a fraction?—It is a thing I know from experience in everyday life that the good man gets no more than the bad one.

10705. And that is quite a right principle, is it not?—No; far from it.

10706. Not that the good man gets more than the bad one?—Yes, but he does not.

10707. We misunderstand each other. If the young man is as good as the old man, and shears as many sheep, he would not subject himself, in all probability, to work for a lower wage?—I should say after the young man has got started for a year or two he is better than the older one.

10708. Surely if one earns as much he will get it?—Yes but he will not get any more.

10709. In my own experience he does?—No, that has never been my experience up till now.

10710. With regard to hedging and ditching, do you find among these men that some of these men you teach are quite old hands at it?—No. I am not allowed by the County Agricultural Committee to do so. I am not allowed to teach them. The man must be a novice.

10711. Does he work for the love of work?—Yes, I presume he does.

10712. I should consider you a very valuable man if you could get all these men to come and work for you for the love of their profession?—If I thought they were coming for the love of money I have the privilege of denying them coming on.

10713. Do they continue it afterwards?—Yes.

10714. You are too short of time in Wiltshire to speak of the effect of what you do, are you not?—No, I am not; I could point out different gentlemen to-day who, when I first went, had one chain cut, but who now have a mile.

10715. Are these prizes you refer to given for competition?—No. They have seen the value of having it done, and they have had it done since I was there before.

10716. Supposing you made a tour of seven or eight villages, should you have a competition for a prize for each village?—If they could not provide pupils from one village and could provide them from two or three, then they join together.

10717. But in a competition for prizes, do the villages join together and have a competition at a centre? You do not have a competition in each village, do you?—Yes. And each of these pupils that attend from amongst them is eligible for the prize.

10718. And can earn 25s.?—Yes, that is, if he is the best man.

10719. Do these men ever go to the county shows and

compete in the competitions there?—They are not compelled to.

10720. No, but do they?—That is a thing I could not tell you, because there is never any hedge-cutting there.

10721. Does your teaching come out at the top in the county competition?—I could not say that, but they do very often in local competitions instituted by local gentlemen.

10722. I can quite understand how these men compete under your tuition, but there must be a man at the top, and in all probability always a man at the bottom, and do these men in competing with all the practitioners at the county shows come out at the top?—I could not tell you that, because that work is not done at the county shows.

10723. Not shearing?—Yes, there is shearing, but I have only held two classes in shearing in Wiltshire.

10724. But going back to Lincolnshire, where you were an older hand, has it taken place there?—Yes.

10725. Has your teaching come out on the top there?—Yes.

10726. Does the same apply to ploughing? If your pupils go to ploughing matches are they better instructed, so that they can beat all the other men at the ploughing matches?—I have ploughing pupils that are now instructors in ploughing.

10727. But are they able to hold their own with older men?—Yes, they are.

10728. Then you are only allowed to instruct juniors. You are not allowed to take any elderly men in?—Elderly men occasionally get in, but we prefer to have a class of younger men, and we do not take in professional labour.

10729. Now about money. If this money could be procured by every county council, you would advocate a person of your class being employed by every county council?—I should have someone employed in every county—the very best I could get.

10730. I think Wiltshire and the division of Lindsey in Lincolnshire almost stand alone in employing a person of your class; but if there could be money enough found by every county council, you would recommend someone of your class being employed to teach these manual processes in every county?—Yes.

10731. That is what you meant by saying there was ample room for teachers?—Yes.

10732. Still, you know that is not so?—No.

10733. Do you know any of the counties that have got a teacher of your class?—Yes, there is Somerset, Gloucester, and the other parts of Lincolnshire, and almost every county that you can mention—they have teachers of some description, but not always travelling men.

10734. Are these teachers always agricultural labourers?—Yes.

10735. Always.—Yes, for anything I know, but I could not say, because I have not been in every county. That is a thing outside my jurisdiction.

10736. There is a good deal of feeling about these things, I know, and I daresay you know that is so, if there are people of different classes taking such places?—No, I could not say that.

10737. (*By Mr. Davies.*) Could you tell us very roughly how many students have passed through your hands in Lincolnshire and Wiltshire?—During the five years since 1902?

10738. Yes; give it roughly?—From 3,000 to 4,000, I should think.

10739. That is in hedging and ditching, and so on?—Yes.

10740. Then with regard to hedging, do not you find the farmers think it is much cheaper to put up wire fencing

instead of bothering to have hedges?—Yes, I am afraid they think so.

10741. But you do not think it is cheaper?—I am certain it is not. Of course, I know it is becoming now very popular in many parts to cut the hedge down, and then to fence it by barbed wire. But I always try to make a live thing, and protect it and keep it alive.

10742. Then you think there is a demand for your men?—Yes, there is a demand, and a very large demand, for them.

10743. (*By Lord Barnard.*) One question about thatching. Is not one reason why thatching has become less owing to the fact that there is less arable land and less straw available?—That might be one thing in Wiltshire.

10744. I can tell you, as a matter of fact, it applies in other districts as well as Wiltshire?—I have no had experience in other counties.

10745. Is there anything else you would like to say to the Committee?—No, nothing, only that if I were to give my thought as to what I think would be the very best thing you could do, it would be to try to continue these classes on a very much larger scale than they are. Of course, every gentleman has not the benefit of seeing what I see of them. I always get about the county, and now and then, as I say, I see a great deal of need for a great deal of improvement. Knowing as I do that all of us mankind get our living from the land, I am sorely afraid we are letting the land go more than anything else.

10746. Who actually supervises your work? Take the parts of Lindsey to begin with. Are you under the Education Secretary?—Yes.

10747. And you take your orders from him, and so on?—Yes.

10748. And the same thing in Wiltshire?—Yes.

10749. With regard to the money spent on these classes, there is, of course, your own remuneration. I will not go into that at all, but what are the other expenses of the class?—The other expenses are not large. There is some small remuneration. I think it is about 7s. 6d. which is allowed for the organisation of these classes, but that is about all.

10750. But do the men who come to you get paid for every day while they are working?—No, they get nothing.

10751. They come at their own expense?—Yes, except their masters choose to send them for the benefit they get from it afterwards.

10752. But it pays them even to lose a week's work to come to you, because they get better places afterwards?—Yes.

10753. I will not say better money wages, but places afterwards?—Yes.

10754. (*By Mr. Latham.*) You have just made rather a sweeping remark about the almost neglect of agriculture, or something to that effect. Do you think that is because there is less interest taken in it, or that there is less money to spend amongst the farmers themselves?—That there is less money to spend, is my opinion.

10755. You do not think farmers are quite so ignorant?—No, far from that.

10756. The point is, farmers have not so much money to spend on the little details of farming as they had previously?—No; there are so many more draws from the land than there used to be in years gone by.

10757. (*By Mr. Davies.*) Do the Hunt Committees in Lincolnshire subscribe towards your expenses?—No.

10758. Do you think they ought to?—I must not touch on that question. I know they do in Wiltshire. It is rather an important point that the Wiltshire hunting people give prizes to the extent of £100 for hedges to be cut in the same method as I have been teaching in Wiltshire during the last winter. That is done by the Vale of the White Horse.

Mr. CHARLES SHEATHER, F.R.C.V.S., called and examined.

10759. (*By Lord Barnard.*) Will you tell the Committee exactly what you are yourself?—I am a veterinary surgeon in London, and have been practising over 30 years. I originally served an apprenticeship of five years, two years being in the actual manual work of shoeing horses. Then I went on to the veterinary side of it and became qualified in 1877, and obtained a Fellowship in 1883. I have been Master of the Company of Farriers since 1905.

10760. And you are here as their representative to-day?—Yes.

10761. I believe you wish to give the Committee a very short *résumé* of the history of the examination and registration of the shoeing smiths which your Company have adopted?—In 1889 the Company took a more active part in the trade with which it was originally connected, and a meeting was held at which it was determined to form a committee constituted of some members

Mr. P. Alltoft

25 June, 1907

Mr. C. Sheather.

Mr. C.
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25 June, 1907

of the Royal College of Veterinary Surgeons, of the Farriers' Company, and members of the Royal Agricultural Society of England, to frame a scheme whereby the farriers' trade might be benefited. As a result the Committee framed a scheme which was put into practice as far as it was then able to be put in practice. Personally, I may say that I was an opponent of the scheme at the time, and dissociated myself from it, because it did not attempt to deal with the manual portion of the trade.

10762. It was purely theoretical?—Yes. An examination was instituted, and that was conducted solely on the anatomy of the horse's foot, and for two or three years that was carried out, and a large number of men were registered under these conditions. Then it was changed and a manual examination was instituted as well as the examination on the anatomy of the horse's foot. Then I felt I could give assistance to the Company, and recently I have taken an active part in the management of the Farriers' Company.

10763. You say here that, in 1893, a small committee, termed the Registration Committee, consisting of members of the Court of the Company of Farriers, members of the Royal Agricultural Society of England, and of the Royal College of Veterinary Surgeons, and two registered shoeing smiths, was appointed by the Court of the Company and has been elected annually ever since?—Yes.

10764. What is the work of that committee?—It is to institute and conduct examinations. The Company, from want of means, is quite unable to undertake any real teaching. The teaching of farriers is a most expensive thing. It means a travelling instructor or an ambulatory van with men going round with it, and that has to be supported. That is being done by some of the county councils with great success, but the Company of Farriers, owing to shortness of means, has rather limited itself to the bestowal of a certificate of efficiency after an examination by their examiners, and these examiners are now usually a veterinary surgeon and an active smith—a smith, that is, who is a registered man.

10765. In fact your Company has really undertaken more of the duties of an examining and registering body than an instructing body?—Up till now that has been so.

10766. Would you tell us from what source the expenses of the examination and registration are provided?—The expenses come from two sources—small fees charged to the men for examination and registration and donations by friends of the movement, and contributions by the Farriers' Company itself and individual members of the Company.

10767. Do you find that the finances at your disposal have sufficed to enable you to carry on that work?—We are just able now, with a little increase of the means which the Farriers' Company has become possessed of within the last eight months, to carry it along. We have been working at a loss for some seven or eight years, each year showing a diminution in the funds till this year, when there has been some re-arrangements of the affairs of the Company, and we have got a slightly added amount of income, and that income, together with some donations, now is being diverted into the hands of the registration committee for the prosecution and support of this particular work.

10768. But you could not extend your operations in any way—you could not undertake fresh work?—We could not undertake it with any amount of success. We should fritter away money in ineffectual efforts if we were to undertake teaching in our present state. We might institute lectures, but to my mind those lectures are not of downright benefit to the actual workman.

10769. Your Registration Committee publishes a report every year?—Every year. But there are two years, I think, missing—one was 1905, owing to a change of the clerk of the Company, when affairs wanted a little clearing up. That has been done, and we have issued a report this year: 1903 failed and 1905 failed in the reports; but all these others I have, and I have brought the reports with me.

10770. Perhaps you would hand them in to the Secretary of the Committee?—Yes, I brought them in case of reference, as I could not carry in my mind all the details.

10771. What do you do with these reports? Do you circulate them amongst the veterinary profession, or how?—No, they are circulated in the Farriers' Company and amongst the committee of registration, and anyone who is at all interested can have one. We do not send them away broadcast, because we might waste a lot of money in

sending them to people who are not interested, but they are always open to any one who is interested.

10772. Does the balance-sheet go into these reports?—Every year there is a balance-sheet, and I have here all particulars in full detail as to the sources of the money and how it is expended.

10773. Are these balance-sheets audited?—They are audited by Turquand & Young, except for the last two years. As 1906 was not a very good year we did not hold any examinations that year, because of the change of clerk and shortness of funds. But some examinations were held in connection with agricultural societies' shows.

10774. How far are you in touch with, or how far do you bring your work to the notice of, on the one hand, the College of Veterinary Surgeons, and, on the other hand, the various county councils and agricultural committees?—That is done by circular.

10775. Do they all know what you are doing?—Yes, that has been done every year, and is done at the beginning of the year. There is a circular, of which I have a copy, which is issued. We issued it this year on January the 28th, calling attention to the existence of our examinations. There is a copy of one. (*Handing same.*) There is a deal of difficulty in holding these examinations. It means the collection of horses to shoe, the provision of a forge and material, the arrival at the spot of the examiners, and the arrival of the candidates; you can see that is a very difficult thing to arrange. Even locally it is found difficult to arrange, and it is also much more difficult for it to be arranged from London. But we depend a good deal on the goodwill of people in the locality, who are willing to take a little trouble to make an arrangement. At Birmingham recently there was an examination, and there we have a friend, Mr. Malcolm, a local veterinary surgeon, who takes an interest in the thing, and he lets us use a corporation forge on Saturday afternoon for the examination.

10776. I notice that you do not confine yourself exclusively to practical work, but go as far as recommending the study of certain books.—Yes. Some of these works are very practical. It is a very wise thing to give a certain amount of that kind of study, to be added to the actual practice, as contributing to dexterity in shoeing a horse. It conduces to the horse's benefit if it is done in the best way. No amount of lecturing or reading will make a man a workman. He must know his business and be dexterous in the management of horses and their feet to know how to shoe.

10777. You have had great experience yourself, and do you think that the art of horse-shoeing has improved of late years?—Taking the whole thing, it has improved. The numbers of fair workmen have increased. But I think in the last 30 years we miss the very fine workmen that existed 25 or 30 years ago. There used to be a man who stood tremendously above his fellows. There has been a general levelling; but on the whole the level is now higher than it was 25 or 30 years ago.

10778. Do you think that if it had not been for the efforts made by your Company and others interested in the subject the art of horse-shoeing would have been more declining?—I think certainly it would have declined if the interest in it had not been stimulated. If we have done nothing actually in the way of improvement of individuals, we have done a good deal by drawing attention to the trade, and stimulating the workmen themselves to acquire a better knowledge and greater handiness in their craft.

10779. You think that there would be probably more highly skilled or very exceptionally skilled men?—Yes.

10780. But without your assistance and that of others engaged in similar work, the trade and the level of the average man would have gone down?—I think it would have deteriorated.

10781. In other words, you think you are doing a good work which ought to be maintained?—I think that is undoubtedly so.

10782. And perhaps enlarged?—And enlarged.

10783. To do that more funds would be necessary?—More funds are necessary, and a rather different kind of scheme. You may notice at the end of that document we are now instituting a scheme whereby we shall make another grade of men, that is, men who will be fine workmen, so to speak. They will go through a more difficult examination than that instituted at the present time, in

order that they may become qualified afterwards as instructors or as examiners. The great desire now, I think, is that one of the examiners should be the actual practical workman, and one who, therefore, is in a better position to judge of good or bad work than a theoretical man only.

10784. But at the same time there is an opening, I should imagine, for an increase of scientific knowledge in this as in any other subject?—Yes, but the opening is a very difficult thing as to determining where the line shall be drawn. It is one thing to fit a shoe to a horse's foot as a horse's foot, and another thing to be skilled enough to watch the movements of the animal and determine the action of all its limbs and so arrive at the best method to shoe it. If you attempt to educate a farrier up to that you would give him an education that would take a long time to get. At the present moment the farrier works by rule of thumb. A horse is brought to the man, and the man sees it has bruised itself with one foot brushing against the other leg in a particular place, but that farrier will not be very competent to deal with that case properly. He is not competent to say: "Take that horse outside and let me see how he moves," nor to form a proper judgment of his movements. He is not able to do that, and, as a rule, he scarcely would be taught it successfully. A few men might. Therefore he has to be taught in a sort of rule of thumb way. If a horse cuts himself under the knee with one foreshoe we who know and can watch all the horse's action can say, "If you shorten the inside of that opposing shoe you will find he will miss the knee." But, briefly, the farrier learns by rule of thumb that a horse doing a certain damage can be altered in a certain way, and that is the only way in which they can be taught at the present time. I do not think a farrier will ever be intelligent enough to work out for himself from a horse's action the varying necessities of horse-shoeing. That is where the scientific knowledge must always come in in the matter of horse shoeing, and trained powers of observation.

10785. You know, of course, I daresay, as we do, that a great deal is being done by all the county councils, or most of them?—Yes, that is so, and a majority have applied to us to nominate examiners.

10786. Some of them help you, I think; and do you think we ought to suggest that every county council should help?—I think so.

10787. In the interests of agriculture?—Yes.

10788. That every county council ought to undertake instruction in farriery?—Yes. Part of the value of the agriculture in the country is its horse stock, and bad shoeing of the stock lays the foundation of diminished value in after years. A young horse, if badly shod when two or three years old, at five years may be terribly depreciated in value owing to that.

10789. (*By Lord Moreton.*) I should like to ask you one or two questions as regards funds. I think I am right in saying that the funds at the disposal of the Farriers' Company are, briefly speaking, limited?—Yes, exceedingly small.

10790. I think I may also say that you wish to point out to this Committee that all those funds are really devoted to the objects of the Farriers' Company?—Yes, that is so—it has been quite so.

10791. And there is practically no moneyspent on strictly outside objects?—No, nothing. There is a little spent on that which is contributed by members of the Court in their fines.

10792. (*By Mr. Acland.*) Have you any general comment to make on the practice of county councils in encouraging farriery? Have you any comment to make on any general defects that you notice in a good many counties?—I cannot say that I have. I travel about a good deal, and in those counties where the instruction has been given by a travelling van, there is a better knowledge of shoeing, and a better handling of the thing than in those counties where no such efforts are made.

10793. Do you think on the whole where the work has been taken up it has been done in the right way?—Yes, I think so.

10794. You cannot give any general criticism or suggestion as to that, can you?—No, I do not think I can. The only fault one sees with these things is that a workman has already started work and got into methods which probably are not the best, and then comes along an instructor, who tries to divert the man from his old groove and make him adopt new methods. The fault of all instruction of this kind is that the workman has some knowledge that is probably got in a haphazard sort of way, and then he is

asked to put that into shape by instructors afterwards. It would be so much better if the instruction could come from the beginning, and that those belonging to the trade should have a grounding in the simple anatomy of the hoof, and the simple principles governing shoeing, before they commence to practice it as a trade.

10795. Do you think that must be done by coming into the locality, so to speak, by means of travelling vans, for instance, or taking the class to the man?—There are not enough farriers wanted in one locality to warrant the institution of a permanent school. A great central permanent school might be established, and pupils could go there, but that means expense, which I can offer no estimate of.

10796. But in any big county, say Devonshire or Somersetshire, what would you suggest is the best way to get hold of young men who are going to be smiths?—I cannot say, because one does not know from what source the young men come. Usually they are from farriers' families. Farrier succeeds farrier, and they begin to work in the forge straight away. Apprenticeship is almost a dead letter now. That is the best way to produce good workmen, but that has dropped out, and the next best thing would be to form classes in forges under a travelling instructor. That is the next best thing I can see at present.

10797. That is what you would advise if any county council came to you and said: We have got so much money to spend on farriery?—Yes, I think all classes are benefited by these instructions, but the best result is not obtained except by taking the farrier before he commences his work and teaching him something first.

10798. You think more can be done by ambulatory classes than by offering scholarships, for instance, to young men to become farriers, who would come to a centre?—If that could be done, and a centre could be maintained, the cost of which I do not know, I should certainly prefer the centre. I do not think a travelling forge can maintain itself in one district long enough to give the period of instruction necessary, but a single travelling instructor might. There may be a horse coming to the forge one day with a good foot, and the very next day after the travelling forge is gone there may be a horse with a very bad foot, when instruction is most wanted, and there is not the instruction at hand that is required. A central place would be far more efficient, where a pupil could go for a couple of months. But then the difficulty of that would be the provision of horses, because with instruction in farriery there is the necessity of having horses, and that is the great difficulty—to find the animals on which the man can practice, or on which he can see the trade carried out. Apprenticeship in this trade is the only thing, and that should be only permitted to men of known capacity and known skill in their trade. If the inferior man takes an apprentice, the apprentice becomes an inferior man. Our examinations have done good by stimulating men to become registered, and the better men have done so in large measure, and if only we had means we certainly should assist apprenticeship to good men, because it is a trade that you cannot teach in five minutes, there are so many variations in it, and although the ambulatory forge or the travelling instructor is as good as anything done yet, and is an improvement on doing nothing, still it is not equal to a school where a young man could go for a couple of months, say.

10799. You think in default of a school, money might usefully be spent by county councils on helping the apprenticing of men to good smiths?—Yes, that would be even better than ambulatory schools.

10800. (*By Professor Middleton.*) When do your young smiths begin their work?—Usually about 17.

10801. Not before 17?—No, not before.

10802. You say the apprenticeship system has almost died out, I understand?—One hears of but very few apprentices.

10803. A young smith is not put on to mend the horse-shoe just to begin with, is he?—His duties are first manual—usually carrying coals and stubbing old shoes. He gets to handling tools, and blowing of the bellows and heating the fire, and then giving a blow to the fireman.

10804. As a matter of fact does he begin to touch the shoe in a year?—No, it is longer than that. It is three years, probably, before they go to forging shoes, and often not then.

10805. So that the young men you want to instruct would be about 20 to 22?—Yes, about that. Our examinations show men at 20 sometimes to be very competent, and far superior to the old men. I have seen it at Birmingham.

Mr. C.
Sheather.
25 June, 1907

Mr. C.
Sheather.
25 June, 1907

I saw a young fellow of 19 examined who was the best mechanic in the place that day. Some men have a special aptitude for it, and can do it very quickly.

10806. Your suggestion is that we should have, failing a system of apprenticeship, an instructor going round?—Yes, I think that is the best plan, though it is taking a steam hammer to crack a nut, considering the few who require the instruction, or who benefit by it. The older men will not benefit by it.

10807. I should have thought even the older men if they saw a good smith coming would endeavour to learn something from him?—Yes, but there is always jealousy, and a man a few years older than the instructor does not feel that he can get instruction from him, and is not willing to admit it.

10808. (By Mr. Latham.) You gave us the year 1890 as the year that this interest in horse-shoeing started?—Yes, by the Farriers' Company. They were the originators of it, I think. They really drew attention to it.

10809. Are you quite sure you were the originators? Did not some of the county councils start prior to that?—I do not know that; I have no knowledge of it.

10810. Was not it the very fact that some of the county councils were starting this that drove you up a bit?—I do not think so. By referring to the reports I could find when the county councils took it up.

10811. I daresay you knew Mr. Albert Wheatley very well?—Yes.

10812. He and I started before 1890 with a travelling van, going round the county of Berkshire, and many counties in England besides?—Yes?

10813. That was the impetus, I think, to the Farriers' Society. We did not start from you, but you from us?—I do not wish to arrogate to ourselves the position of being the originators in every way, but I think we were.

10814. (By Lord Barnard.) The first resolution of the Company of Farriers I see is dated 1889?—Yes.

10815. The Act was passed in 1888?—I think I have the dates here about the Berkshire County Council, and I think I can read you something about that. This says: "The Berkshire County Council, which was the first to organise lectures on horse-shoeing"—

10816. (By Mr. Latham.) And the travelling van?—Yes, "This year the Council proposed to dispense with lectures, and they have under the superintendence of Mr. Wheatley organised a migratory school." As this is from the Registration Committee's Report for 1893, therefore, that brings the date correct, namely, 1893.

10817. Now with regard to the travelling school with the vans, it is, I suppose, we may take it, the only alternative?—It is the only alternative at present.

10818. Can you see any way of possibly starting a school in farriery?—No, I do not see it unless the school is a large one for the whole country. Locally there are so very few men in a district requiring instruction that you cannot establish a school. It would be only lasting six months, and then put aside till another man came along. It is not as if everybody wanted instruction in horse-shoeing.

10819. You know that the van started in Norfolk, and has been running ever since?—Yes.

10820. I suppose I may take it from you the van has done extraordinarily good work?—Yes, and we say so.

10821. You yourselves feel as a Farriers' Society, that you can never be a teaching body?—We do not see how it can be done. We have not the means, to begin with. But we do not see how it can be easily done. We can give instruction in a way, but that instruction must be, naturally, desultory, and must be by means of lectures, and I for one do not consider that lectures are very beneficial to the trade generally.

10822. But still I suppose you will agree that lectures by such men as Mr. Wheatley and Professor Pritchard, and that class of men, could be very beneficial to the farrier?—They could be beneficial. I do not say very beneficial. My experience is they are not. They cannot do harm, and they must do good.

10823. But speaking from experience, is it not rather a wonder that there are any shoeing smiths at all?—I do not think so.

10824. Nature has in a sort of way taught them up to now. The old smith never had any education, had he?—No. He did what his father and grandfather did before him.

10825. And a great many of them really did not know they could do wrong by driving the nail into a soft place in the foot?—They found that out, and they found it out very early in their lives.

10826. They found it out by punishing the horse?—They knew that the nail pitched in a certain direction did damage, and pitched in another direction did not do damage, and probably they learnt that from their fathers, and their fathers probably got that discovery from their great great grandfathers.

10827. Except by diagrams and sheets they were perfectly ignorant of the inside of the horse's foot?—The majority were.

10828. We have found a very great disinclination on the part of the older men to be taught, but on the son getting to be a better man than the father, they very soon found it necessary for them to be taught. Have you not found that is so?—I quite believe that.

10829. Now with regard to your examination, you said I think, that you charged fees for all examinations?—Yes.

10830. But that is not quite so, is it?—In some cases it is, and in some cases it is not.

10831. But you allow us at all our agricultural shows to examine free?—You examine free, and our examiner examines on our behalf for the granting of a certificate. Sometimes he receives pay, and sometimes the pay is given by the Society.

10832. But these men, the smiths, never can pay anything?—In some cases they do not.

10833. Then it would be wrong for it to be put in our report that a registered smith could only be registered on his paying fees?—It would be quite wrong to say he could be registered without.

10834. For instance, last week we had an enormous number of men at Newport, and every man that gave his name in was examined and registered, but he did not pay any fee?—I do not know how that is arranged, and whether the Society pays the fee for the men.

10835. Do you mean the Agricultural Society, or your Society?—The Agricultural Society. I do not know whether our Company under certain conditions, considering the expense of the examination is borne by the Show, do not supply the examiners. Probably we may in some cases. Not all these are hard and fast principles. Some vary from others. I think it is an advantage that the whole expense of the examination is borne by the Society giving the Show. In some cases our examiners are sent free at our expense to examine, and the men do not pay in those cases an examination fee, but only a registration fee.

10836. Do you consider that these men that are registered at the Show are practically or entirely on the same basis with the man who pays his fees, and is examined by you?—Yes, I think so, as he goes through the same examination as he does at other places.

10837. How do you set any examination?—We send examiners down.

10838. But do you set any examinations? This is rather a sore point with me, and I take great interest in the examinations, but we never seem to have any schedule to go through your curriculum?—I think it is in the circular that I have handed in that the examination shall be a theoretical and manual one. It gives details. The man shall prepare a fore foot, and make and put on a shoe, and do the same with the hind foot, and answer questions on the anatomy of the horse's foot. That is distinctly stated in the circular sent round.

10839. Do you expect these examinations to be made on the horse's feet that are produced?—No, the theoretical examination is made from models, of which Mr. Wheatley has a number produced. The theoretical examination is made upon that, and the practical examination is made by inspecting—the man going through the whole of the work which he has to do.

10840. But all your veterinary surgeons are not Mr. Wheatley, and when a man is disposed to hold an examination of your class has he any models to produce to that class?—No, not of necessity. As a rule they do. Mr. Wragg does.

10841. Are you satisfied with him examining without producing these models?—I do not know that they do not produce the models.

10842. But if you are going to lay as much stress on registration as I think should be done we should have some definite line sent to us at every show that that must

be the line these men must be examined on?—I think that is very clearly laid down there. I think it is easy to find what the men are expected to do.

10843. Now with regard to shoeing a bad foot, we have a class there that does what we call turning shoes from models supplied by the judge. Do you hold that is good teaching?—Yes, I think that a man should be able to work to a model. That is part of what I said before. That is the only way to teach a smith—that is, to show him models for such purposes, and ask him to copy them. By that means he can make them.

10844. That is scientific teaching, I suppose?—Yes, that is scientific teaching.

10845. And of great value?—Yes.

10846. Do you keep a register of these shoeing smiths? Yes. There is a copy of it. (*Handing same.*)

10847. You allow a doorman to be registered, as such, as young as 21 years?—Yes.

10848. What do you consider the capacity of the doorman is? What must he be able to do?—To strike to the fireman, to file up a shoe, and put it on by driving the nails and clenching them off.

10849. Has he to pass the same examination on the horse's foot as the other man?—He has to pass an examination in just the elementary anatomy of the foot. He wants no more for his trade.

10850. He really has to pass as strong an examination as the master man?—He has to pass the examination that is mentioned in that circular on the anatomy of the horse's foot.

10851. Just the same as the other?—There is very little difference.

10852. But there is a difference?—There is a difference in the matter of clip clips, forging and fitting out, and that sort of thing.

10853. I think you send out to almost all agricultural societies that you allow these examinations to be held?—Yes.

10854. But you do not make it a *sine qua non* that the examiner must come from your own body?—That I am not sure about, but in the majority of cases they are selected, and we have a list here from which the examiners are selected, if you would like to see it.

10855. I have seen that?—I do not know that you have seen them very lately.

10856. I have seen it for this year, and I want to ask the question: do you allow registered smiths to examine?—Yes; only if they are on our list.

10857. Do you think, as a veterinary surgeon, that they know enough of the horse's foot to hold these examinations?—Certainly they do not. The examination we give our certificate for is held jointly by a veterinary surgeon and shoeing smith.

10858. You are quite prepared to accept the veterinary surgeon alone, but not the registered smith?—No, not the registered smith alone. We should accept the veterinary surgeon who is well acquainted with horse-shoeing alone.

10859. But it is suggested that the registered shoeing smith should not examine. I think there are very few registered shoeing smiths that are competent to examine?—That is so, and with that view we have only on our list Thirle and Mills, who are well known to us to be exceedingly good men. The last scheme brought forward as the remedy for that is to get the men to pass the superior examination, and from them should be drawn the examiners. I do not know whether you have noticed that. The two might continue to work together in examining, but we are short of registered shoeing smiths who could be trusted with the examination. We are, therefore, now initiating a scheme to bring forward a higher grade of men, and men who after having become R.S.S. shall go through another examination. I have a syllabus here which I should like you to take and read at your convenience. That only gained the assent of the Court of the Farriers' Company yesterday, so that you have an advance copy of it. It is not quite in these words, but the scheme has been approved in that spirit. (*Handing syllabus to Mr. Latham.*)

10860. Is there any feeling that this registered shoeing smith's certificate is too easily gained?—I do not think so. I have not experienced that feeling yet. I think in the early time it was so, when a number of men were admitted on testimonials only, and a number of men, from 19 to 23 say, were admitted on an examination of the anatomy of the foot of a horse only. I know a man who never had

put a shoe on a horse in his life who went under the examination and that is when I objected to the scheme. But since the manual examination has been instituted as well as the theoretical, I do not think it has been objected to.

10861. You are willing to admit there has been a very great advance in horse-shoeing since 1889?—I think horse-shoeing has improved very considerably.

10862. The old-fashioned way of making the foot give to the shoe has almost died out?—Yes, the foot is studied individually by the man.

10863. And now when a horse gets on in age there is a very visible improvement in the formation of the horse's foot?—Yes, horses' feet have grown stronger and better than they were.

10864. There is very little money now spent by the county councils on that subject. There has been more done to improve the system in agriculture than in other ways?—I do not know about that. I know that money spent in farriery is very well spent.

10865. It has been an absolute wonder how the shoeing smith existed—"he grew," as a very old friend of yours said?—Yes, he grew. He profited by what his father did before him. He had a rule of thumb, and he did as his father did before him.

10866. It is not very surprising that shoeing smiths got rather low in numbers?—No, not at all. It is a very laborious trade. One difficulty in obtaining them is that the man who is intelligent enough to benefit by instruction in doing this work, is, as a rule, intelligent enough to take up some less laborious occupation.

10867. But the business of shoeing smiths has increased wonderfully. There are a great many more shoeing smiths than there were some years ago?—I do not see how that could be, though horses have increased in numbers. I know farriers' shops that have been shut up in London.

10868. That is perhaps from motor cars coming in, but in the country we have more shoeing smiths?—Yes?

10869. (*By Mr. Medd.*) Is your Company in the habit of sending annually suggestions to the various local authorities as to the desirability of instruction in farriery, and the best methods of imparting it, and the duration of the course, and the results which accrue from instruction?—No, we have not done that.

10870. Do you not think it would be an effective way of increasing your work to do so?—I daresay it would be so, but as the farriers' trade is governed in the various districts by local conditions it is impossible for us to dictate, say to Northumberland or Cornwall, how instruction should be given. Local conditions vary to that degree that we, as a central body, could not dictate any advantageous plan for them to pursue.

10871. What I would say rather, then, is the advisability of impressing every local authority with the desirability of instruction in farriery?—Yes, that would be all right.

10872. You would bring before them the successful results which have within your knowledge accrued in all localities?—Yes, I think that has been done by the issuing of our circulars every year to public bodies as well as to farriers, I think that the advantage of our examination is put forward in that way.

10873. But as part of the examination you want a class?—The difficulty of the whole thing is that we, as a body, who have given this examination, cannot dictate at all how the knowledge shall be obtained; we allow people to obtain the knowledge as best they can.

10874. But my point is, as to pressing upon local authorities the desirability of imparting such instruction. The exact kind of knowledge which should be imparted may be left?—That must always be left to be governed by the local conditions.

10875. Then would your Company be prepared to circularise each local authority annually as to the desirability of forming classes in farriery?—Yes, I think they would be very willing to do that.

10876. I hope you will bring it before them?—In fact I am not quite sure that it is not done now. I believe that public bodies receive notice from us, and have done for a long time past, because they are in constant touch with the secretary as to the examinations, and as to the appointments of the examiners.

10877. I mention that because I notice that in so many counties no instruction in farriery whatever is given?—No.

Mr. C.
Sheather.
25 June, 1907

Mr. C.
Sheather.
25 June, 1907

10878. There is none in Berkshire, is there?—In Berkshire I believe there is.

10879. Then why is it omitted from the Government report?—That is one of the points made a little while back as to the difficulty of establishing a school—that you have not enough farriers to keep the school in existence unless it be a large central school.

10880. The public, and those who read these reports, are not in possession of these facts, and my point is simply as to the desirability of impressing the importance of such classes annually upon every local authority?—Yes.

10881. And I hope you will kindly consider it at some one of your meetings?—Yes.

10882. You are aware of the good work that is done in Monmouthshire and Gloucestershire?—Yes.

10883. If every county adopted the system of Monmouthshire and Gloucestershire in organising classes, no doubt considerable improvement in farriery would be the result all over the country?—Yes, that is so.

10884. (By Lord Barnard.) I suppose you will agree with me that in the case of farriers as in the case of everybody else concerned in rural businesses, you cannot hope to succeed the first time, and you try to convince people engaged and to persuade them of the necessity of instructing them at all?—Yes, one meets with most lethargic bodies.

10885. Perhaps your experience is the same as mine. When the Royal show was held at Darlington I tried to persuade my own smiths to go and pick up some wrinkles at the lectures given at the show there, but they came back and practically informed me that they knew as much as the teacher?—Exactly.

10886. That is the sort of feeling?—That is the feeling.

10887. Then, if your Company were to undertake the

duty of being the apostle of this kind of work, it would mean an increase of expenditure?—We are already expending all our funds practically, and we have not enough. We do not do it to my satisfaction, at any rate. We are limited in means, and we find the very greatest difficulties in the way usually. In regard to that, personally, I say it is not from want of energy or desire, it is from want of means.

10888. Do you think the Board of Agriculture might take up the case and urge the necessity upon local bodies?—I think it would come better from someone in authority than from a voluntary company. We do what we can to bring to the notice of people our efforts to improve the trade; but we cannot compel people to do it, but only urge upon them the advisability of doing it.

10889. The ratepayers of the county should urge upon their own representatives the desirability of it if they want it done. Would you agree with that?—Yes.

10890. Public opinion should do it?—Yes, public opinion should be brought to bear upon these subjects.

10891. It is hardly the duty of the Farriers' Company to tell the county councils how they ought to do it, but it is the duty of the people of the county?—Yes, that is so. The whole of our work is voluntary. What work we have done we make no profit out of. We are working at a loss every year, and I think we ought not to be subject to any criticism on that matter or be forced to take up work of the kind. We do the utmost we can, and do it to the best of our ability, and we are willing to do a great deal more if we have the means of doing it.

10892. (By Mr. Latham.) I have not seen this paper before, and may I ask what is about the proportion of men that pass in comparison with those that come up for examination?—I could not give you that now.

Mr. GEORGE LANGRIDGE, called and examined.

Mr. G.
Langridge.

10893. (By Lord Barnard.) You are, I believe, the President of the Surveyors' Institution?—I was until the 1st June last.

10894. You know, I daresay, the terms of reference to this Committee?—Yes.

10895. Might I ask you whether you are going to speak here exclusively on your own behalf, or whether you represent the views of your Institution?—I speak on my own behalf; but I think I may say I know pretty well the views of many of my fellow members to be the same.

10896. Is the subject of agricultural instruction one that often comes under the view of the Institution?—Yes, we have established scholarships at Cambridge and Newcastle and Bangor for agricultural subjects, where there are degrees given.

10897. Do you attach any conditions to these scholarships as to what the young man has to do after he has passed through his examination?—He is expected to follow up the business of a surveyor. That is intended. When he goes in for a scholarship it is expected he has made up his mind to follow the profession of a surveyor or land agent.

10898. Is that the arrangement that has been arrived at by the Committee of your Council?—Yes, and I was one of the Committee.

10899. I assume the members of that Committee satisfied themselves of the value of the work done in these University colleges?—Yes.

10900. You thought it would be an advantage to provide young men in your profession with all the benefit they could get from the courses of instruction in these colleges?—Yes, that was the object. Those who can give the time to study these interesting subjects do it and take a degree in agriculture.

10901. Is it your opinion, and is it the opinion practically of members of your profession generally, that it is desirable if possible that surveyors and land agents should have some scientific training?—It is. That is quite their opinion. In fact, it is really necessary to have some considerable scientific knowledge to pass our own examination.

10902. You have an examination already of your own, have you?—Yes, we have three examinations leading up

to the Fellowship of the Institution. You have to pass the preliminary, the intermediate, and the final.

10903. You do no teaching?—We do no teaching—only examining. But we accept the certificates of certain examining bodies in lieu of our preliminary examination, which is merely scholastic.

10904. Do you consider your examination stiff?—They say it is. It is only perhaps 70 or 75 per cent. who pass. It naturally grows stiffer every year.

10905. That is the only qualification—you do not require any practical acquaintance with agricultural pursuits, do you?—Yes, as far as agriculture is concerned a man has to answer the questions put, and must have some practical knowledge. Being surveyors, they are required to have practical knowledge. The examination covers practical work, but not manual work.

10906. But a sufficient acquaintance with customs as to the rotation of crops and the nature of various artificial manures, and so on?—Yes, and soils and chemistry, and different sorts of stock, and all things generally affecting agricultural matters in the country.

10907. So that a man when he starts in business may not be looked down upon as ignorant of his own profession when he comes to actual close dealing with a farmer?—If he passes his examination fairly he ought to have a good general knowledge. Our examinations are in three classes—the land agent class, which practically covers all these subjects; the valuation class, which covers valuations as well as some of these subjects; and there is the building class. They come under these three heads. They are not transferred from one head to another.

10908. You consider, no doubt, that a knowledge of the nature of farm buildings and building materials and of the best methods of construction of farm buildings, and so on, is essential?—That comes into our land agent class.

10909. It is a matter of very great importance that a land agent and those concerned in the management of land should have a fair amount of skill in the planning of farm buildings?—Yes, that is so. It is one of our most important subjects. They have to sketch and plan and give their own ideas of what a farm building should be.

10910. Do you include land drainage?—Yes, drainage is one of the subjects—or it was lately—we are not doing

that so much now. There is very little draining being carried out at present.

10911. Some of the old draining has got out of date, I suppose?—Yes, and we are beginning to doubt whether the expenditure on some of it was not wasted.

10912. I suppose a student must have a certain knowledge of geology?—Yes, geology and a knowledge of soils.

10913. Is meteorology included?—No, not meteorology. We give lectures on geology, and we have a fine collection. Professor Woodward read us a paper on this subject this last session.

10914. I think your Institution takes a great interest in forestry?—Yes, that is one of the things we take a particular interest in. We have special examinations in forestry.

10915. I think you do know what has already been done by Government aid at Bangor and Newcastle, do not you?—Yes, I know what is done at the Armstrong College and at Bangor.

10916. Do you think that more could be done in that way?—I have been to Cirencester and Aspatria, and inspected their work. Then there is Uckfield College. They all are doing really good and excellent work, and they are teaching well; and the men from these institutions, with their education should make good land surveyors, and good farmers where they have the means. I do not think they are teaching to the extent they might be the agricultural population. They do it in a small degree. There are courses, but what is a fortnight's course to teach a teacher? In fact, it is a case of a little knowledge being a dangerous thing. At Uckfield, I understand, they have a 12 weeks' course, and at Wye 14 days.

10917. We should like to have your evidence as to the opinion of yourself and your professional colleagues as to the work of these colleges from the information you obtain in the course of your profession?—We feel they are doing good work and that is the reason why, on our Committee, we have availed ourselves of our funds to enable the coming generation of surveyors to gain a higher class of agricultural knowledge.

10918. (*By Mr. Medd.*) May I put this question now instead of later: Wherein does the instruction in forestry at the Armstrong College show superiority to similar instruction at Cirencester?—I do not think I have drawn this comparison. In fact, I do not know enough of the Armstrong College to say; but I think from information given me at the Armstrong College it is quite as good.

10919. I understood you to say it was doing excellent work; but you must remember that our Chairman to-day is the representative of Armstrong College, which is a very very highly Government-subsidised one?—Yes.

10920. And Cirencester has not a halfpenny?—No, I am told so. I have been to Cirencester.

10921. You cannot claim any superiority at Armstrong College over Cirencester?—I hope you did not think I even hinted at it, because I did not think of comparing the two colleges. I know more of Cirencester than of Armstrong. I believe Cirencester is doing excellent work, and I much regret it is not receiving Government assistance. No college is worked on better lines. I do not wish to draw any comparison with Armstrong College.

10922. (*By Lord Barnard.*) To continue the subject I began with; you know, of course, that Government assistance is given to a great many institutions for higher agricultural instruction being provided?—Yes, I know that; but it is small compared with other countries.

10923. Do you think that the Government gives sufficient?—No, I do not—not to make it so generally known as it should be. I think the schools might be more highly subsidised; and the principle of subsidising might go even to the lower grade schools, and it would be a great advantage to the agriculturists.

10924. Do you come into contact with cultivating farmers?—Yes, I was born a farmer and followed it for many years.

10925. You know the opinions of other farmers on the point?—Yes, I know one thing, and that is that the farm labour we get now is not on the whole so good as it used to be. The men of course are looking out for other work. For instance, I may say I advertised for a clerk the other day and had 100 applicants, and I also wished to get a man acquainted with fruit and a good bailiff, and I found it very difficult to get one, with the wages about the same.

10926. Have you any idea as to how further public

money could be spent with the greatest advantage?—I think you might make it compulsory for masters and mistresses of the parish schools to attend a course at these colleges.

10927. Do you mean to train the elementary teachers?—Yes, to train the elementary teachers—to properly train them.

10928. That is really outside of the scope of the reference to this Committee, but other witnesses have touched upon it; and is it your idea that, if teachers of elementary schools had more agricultural training, perhaps the result would be that in rural schools the children would be more inclined to stop in the country?—I think so. I think that would interest them in their work. Instead of that they are now going away from what rural training they used to have—the information they used to get in their school days is not available now. Their interest has not been stirred to any extent in agricultural questions.

10929. Is that a subject which is largely discussed in your profession?—Yes, largely discussed.

10930. And you think you are stating the opinion of your fellows?—Of my own profession, especially as land agents and valuers.

10931. You live in the country, do you not?—Yes.

10932. In an agricultural district?—Yes; I live in Kent.

10933. And you also think that practical knowledge of farm work would be an advantage?—I think it is most necessary. If they do not commence that at about ten to fifteen I do not think they care for manual farm work.

10934. You told us very briefly the names of some institutions?—Yes.

10935. Two of them you named were private institutions and the others public institutions?—Aspatria and Cirencester are private, and there is Uckfield, a county college.

10936. You are aware that there are others too?—Yes there are in Hampshire and other counties, and I think they are doing good work.

10937. Have you any suggestions to make for their improvement?—I know more of Wye and Uckfield than of the others; but, as far as I can judge of it, I think that they are doing good work, except as I said before that possibly their training is for men who do not require it so much as the labouring classes. As far as I can gather, the class of men we have there can afford to pay. But the colleges are doing excellent work; though I do not know that they are sending out many teachers. The colleges want to qualify other people to teach.

10938. But are not they doing that?—If I had a son bent on farming I should send him to Cirencester or to such a college. If I had a son who wanted to be a land agent I should send him there also. If I had a son who wanted to go abroad I should send him there for information.

10939. Do you know anything of the Government system of leaflets distributed by the Board of Agriculture?—Yes.

10940. Do you think that is good?—Yes; it calls attention to what is required.

10941. Do you know that most of these colleges issue reports of the results of their scientific work?—Yes, I think that Aspatria and Cirencester and Wye College and also Uckfield do, and it is very useful information that they get and they do their work well.

10942. If that collection and dissemination of useful information were still more organized do you think it would be good?—Yes, and it should be properly disseminated.

10943. And probably the Board of Agriculture would be the body to organise?—Yes. I live in a county where there is a system of hop growing, and I should be very glad to get rid of anything which is detrimental to the interest of that industry.

10944. (*By Mr. Latham.*) You made the remark that the class of labour was not so good as it used to be? That is my opinion.

10945. Has not education a little to do with that?—I think so. Formerly they certainly had more time to learn and more interest in their work. You hardly ever saw a man without an understudy of a boy with him, but now it is difficult to get a boy to help the thatcher or to help with a horse.

Mr. G.
Langridge.
25 June, 1907

Mr. G.
Langridge.
25 June, 1907

10946. That is possibly because of their not coming on the land soon enough?—That is my view. If you let them get past 10 or 15 they are drawn to the towns and they have lost interest in the country, and the parents do not care to encourage them much to stay in it.

10947. Ten to 15 is a good big margin; we can get our boys now at 13?—From the sixth standard?

10948. Yes, if they have passed the standards or make their attendances; but then there are so many ways of taking up the boys. Look at the number of telegraph boys that are wanted and the different kinds of occupations there are?—Yes.

10949. One thing above all others is that agriculture is not very well off as a rule?—No, that is one of the main drawbacks. They have not been able to compete with the wages of the towns.

10950. Now with regard to these scientific places that you see marked with red spots on the map, do you think it is a very great advantage to a farmer to be very highly educated in regard to scientific knowledge?—I do not think he can possibly lose by the knowledge, but, I will say, he very frequently misapplies it.

10951. Do you not think that, to use the words that have been used, if they have three-fourths practical and one-fourth scientific knowledge it is quite enough?—I would sooner have three-fourths practical and one-fourth science than the other way about.

10952. But at the same time you agree some science is better?—Yes, undoubtedly it is better to have it.

10953. And the only safeguard that the farmer has to make is to see that he does not get too scientific if he wishes to follow agriculture?—Yes.

10954. Now you are mentioning very favourably these colleges and saying that if you wanted to have a very highly educated surveyor or land agent you would send him to these colleges?—Yes, I should do so.

10955. The things are totally different?—Naturally. The more intimately a surveyor knows his work the better it is for him undoubtedly.

10956. But still my remark applies again, that the surveyor should be quite three-fourths practical?—Yes; we make that a necessity. We should not consider an examination as sufficient to make a surveyor. We do not give the Fellowship of the Institution till candidates have had five years' practical work.

10957. (*By Professor Middleton.*) You conduct three examinations I think altogether?—Yes, we have three grades.

10958. Three grades?—Three grades and three examinations.

10959. How long have those examinations been going on?—Getting on for 39 years it must be now. Now to become a member it is absolutely necessary to pass an examination; and 10 or 12 years ago membership was by election as well as examination.

10960. You are now a loose corporation; you can only become a member by examination?—They have to go through the eye of the needle otherwise I would not say very eminent men may not be elected members, but examination is practically the only way.

10961. Then you may have how many candidates for these examinations?—Three were 500 for the professional examination this year. Besides, three were 150 for the students' or preliminary examination. We have grown from a very small number up to 4,000.

10962. Can you give me any idea of the rate of progress made by these examinations and the increase in numbers? It has been rapid, has not it?—We do not expect it to be so rapid in future. The examinations are no doubt stiffer, and we have some special subjects. They cannot pass them, perhaps, and more go back every year.

10963. This year you had 400 coming for the fellowship, had you?—Yes, about that.

10964. And ten years ago how many?—200 or 300. I did not bring the details with me.

10965. I wanted to ascertain whether your examinations were more numerously attended?—Yes, they are.

10966. Has your Institution noticed whether the quality of the candidates has been affected at all by the educational

facilities that have been given in the country during the last 15 years?—Yes, I think so. We have found a great many of our best men have come from these schools. From Cirencester we have had many excellent members now, and from Wye and other colleges. We find that the technical and practical instruction that they get there is of very great service to them in passing the examinations. Of course a great many pass direct from surveyors' offices and they study, for perhaps, two or three years with a man who coaches them.

10967. You prefer one from the Institution rather than one taught privately?—Yes, I think so. They are more grounded in practice than the others. As to private candidates, I mean men who have been coached for a short time only. We feel we are on safer ground with the colleges.

10968. Then you have indicated your appreciation of the value of examinations not only by making it the only means of entering your own profession but in other ways?—It is not the only means.

10969. Practically so?—Of entering our Institution, but not of entering the profession.

10970. You have also indicated your appreciation of the value of examinations by raising the standard of entrance. That has been the tendency, has it not?—Yes, that is so.

10971. I attended the meeting of the Committee of your Institution who were making arrangements for the scholarships to be held at Cambridge, and I found that your Committee had very high educational ideals and set a high standard?—I am very glad to hear it.

10972. I take it that they represent the general body?—Yes.

10973. I may say as a matter of fact that their standard was one that could only be reached by an exceptionally good student. They require the student to take an honours degree and also a diploma in agriculture within three years, and only a good man would be able to do so?—Yes, the scholarships are limited to certain conditions. We wish to have great ability for every grade, because they are certainly the crown of the edifice.

10974. Your idea in these scholarships is to secure a certain number of able young men with the best training that you can give them with a view to their entering the profession?—Yes, so that we should have the benefit of their knowledge in the profession. That is the intention.

10975. But all these men must be students of your Institution?—Yes.

10976. At the same time that they attend the University?—Yes, they are students at the same time.

10977. That is a very satisfactory arrangement from the educational point of view is it not?—Yes.

10978. (*By Mr. Medd.*) I think you complain of the quality to-day of the agricultural labourers?—Yes; speaking practically my own impression is that the agricultural labourer on certain work is very much more difficult to get than he was.

10979. In fact, the handy man and the man who can engage in skilled farm operations is almost defunct?—He is more difficult to get than when I was a younger man, say some 40 or 50 years ago.

10980. From all your wide experience, what would you suggest as the best way of dealing with that class?—That they should have instruction from the very first in the schools at which they are educated.

10981. You do not think it possible by any classes to-day to deal with the adult labourer, do you?—After a certain age, no. I think possibly that a course of lectures at the centres where there are younger men would possibly be good. But it is very difficult to teach an older man the technical and manual part of his work.

10982. That is quite true; the problem, in so far as the adult labourer is concerned, is practically insoluble?—Yes, in fact I have had a great deal to do with fruit cultivation, and I hardly ever succeed in making a good fruit pruner of a man who did not begin young.

10983. Then your remedy is to teach the boy and girl how to use hands and eyes when young?—Yes; and I should like to see a school garden of some description attached to every parish.

10984. That is one of your suggestions here, is it?—Yes.

Mr. G.
Langridge.
25 June, 1907

10985. It would be admirable, you think?—Yes.

10986. Would you suggest that the local authority or the parochial body ought to provide the land; because that is the difficulty?—I should not have thought there would be so much difficulty in obtaining land for that purpose. It would be either the county council or the parish council.

10987. What is your county?—Kent and Sussex are my two principal counties.

10988. One knows that Kent stands first to-day in rural education. There is no question of it. Your village schools are superior to those in any other part of England, and you have no difficulty in acquiring land apparently; but you would suggest that as a rule the attachment of, I may say, a quarter of an acre would be sufficient?—I should not like to say a quarter of an acre was sufficient, but it is better than none at all. I should have thought rather more would have been better where you could interest them.

10989. I was coming to the differentiation of two classes, and I may as well come to it now. You speak of children between the ages of 10 and 15; but 15 is an age rather beyond the elementary school age, is it not?—Yes.

10990. You have therefore to consider the requirements of children from 10 to 13?—Yes.

10991. And 13 to 15?—Yes.

10992. You will agree with me that a quarter of an acre is sufficient for an ordinary school for a child from 10 to 15?—No doubt, but even there for the smaller children it would be better to have more. But it depends on the school. For a school with 150 to 200 children a quarter of an acre would be hardly enough, I should have thought.

10993. Then in regard to that particular grade of education you would advocate continuation schools, would you not?—Yes; interest them when young and continue the interest when they leave school.

10994. In your continuation schools you would make the instruction both in the agriculture and in the workshop as practical as possible?—I should.

10995. That is, it would be in direct relation to the particular industries of agriculture and horticulture?—Yes. In a county like Kent poultry and dairying ought to be taught, and fruit growing too.

10996. How far would you be prepared to advocate compulsory attendance at such schools under certain conditions?—I think, if it were made part of the school training, it would be a good thing. I think it ought to be considered a very material and important part of the education at such schools, and so the masters and mistresses should think. It should be part of the educational teaching, not much every day, but some every day.

10997. Then you used the term practical knowledge of manual farm work and practical farmhouse work, and spoke of those subjects as being suitable subjects for children between 10 and 15?—Yes.

10998. Would you not be disposed to agree with me that for a child in an elementary school a practical knowledge of manual farm work and practical farmhouse work is rather out of place?—I do not think so for children from 10 to 15.

10999. But for children from 10 to 13?—Where there is a garden plot you could not begin the child too young.

11000. But that is not practical farm work?—For instance, if it were required to show them how to make a hedge or how to hoe turnips, it should not be shown by a person knowing nothing about it.

11001. All one is aiming at is, so to say, to get an opinion from you as to the desirability of giving a sound general education to the child in the first instance?—Yes, that is so.

11002. You agree with me in that?—Yes, and agriculture should be regarded as as important a part as the other part.

11003. There your technical training in agriculture

should be based upon as good a general education as you can give him?—Yes, exactly.

11004. In fact in your profession more than in any other, I imagine, you have found that the defects of the candidates have arisen from the want of general education?—That is so, and they have in practice very little agricultural education at all. I will not say the scholar does not know a cow from a horse, but there is a general ignorance on agricultural subjects.

11005. Now in regard to the training of teachers at Wye, in Kent, you have done a considerable amount of that kind of work towards the training of new teachers?—Yes, in Kent and Surrey for many years, but the great difficulty, in my mind, is the shortness of the course.

11006. Perhaps you will agree with me again that if they could receive this instruction upon Saturday afternoons throughout the year, it would be far more beneficial than having it compressed within a fortnight during the summer?—Yes, undoubtedly it would be so. But I think for a scholar to qualify for a parish school he ought to have a two years' course, at least, before being admitted.

11007. That is the desirable thing at present. Now you may know, and I hope in Kent you will advocate, the scheme provided at Wye of a special third year's course for elementary school teachers?—Yes, there is that now.

11008. At Wye, certainly. They are getting two institutions in Kent at present, recognised for that purpose?—At Uckfield they give a twelve weeks' course.

11009. But that is not for training teachers?—Yes, I understand it is for the training of teachers.

11010. It is a course extending for a whole year, is it?—Yes.

11011. I hope you will, so far as you can, encourage your local authority to release the teachers in such a way as to enable a portion of them to obtain that instruction?—Yes.

11012. Now you know the schools at Chislehurst Road, Orpington?—Yes.

11013. And at Orlestone?—Yes.

11014. They are excellent schools, are they not?—Very good, and most excellent for both boys and girls.

11015. I have myself sent educationalists from France, Holland, Belgium, Japan, Canada, and the United States, to see these schools, and the schools under the Macdonald scheme in Canada are based upon your schools there?—Yes.

11016. Have you met with this document in connection with that. (*Document handed to the witness*)?—This relates to Cirencester.

11017. Yes, and that is very valuable information indeed, is it not?—Yes.

11018. That is excellent as a piece of literature?—Yes.

11019. Many members of the Surveyors' Institution were educated at Cirencester, were they not?—Yes.

11020. And they have given satisfaction?—Yes, those colleges have passed more than the average.

11021. In regard to forestry, its facilities are enormous, and the result of its instruction has been considerable?—Yes.

11022. I mentioned the point because it needs emphasis, and because Cirencester is the only private institution conducting this work, with the exception of Aspatria, without the slightest aid from either Government or local authority?—That is so.

11023. (*By Lord Barnard.*) May I sum up what you have stated by saying that you would be inclined to suggest that this Committee should report that so far as scientific and technical instruction in these higher branches is concerned, the provision made is satisfactory?—I will not say it is sufficient.

11024. I did not say sufficient, but satisfactory?—It is satisfactory.

11025. But so far as the elementary and lower branches are concerned, it requires a good deal of supplementing?—Yes, it requires a good deal of supplementing.

TWENTY-SECOND DAY.

Wednesday, 26th June, 1907.

PRESENT :

The Lord BARNARD (*in the Chair*).

The Lord BELPER.

Lord MORETON.

Mr. DAVID DAVIES, M.P.

Mr. F. D. ACLAND, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. W. GOARING called and examined.

*Mr. W.
Goaring.*
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26 June, 1907
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11026. (*By Lord Barnard.*) You hold the office of Lecturer in Horticulture to the Education Committee of the County Council of East Sussex?—I do.

11027. How long have you held that appointment?—Fifteen years.

11028. That is from the beginning, almost?—Almost.

11029. The Committee have had a considerable amount of evidence from those holding similar positions to yourself. I dare say you are aware of what has been done in other counties?—To some extent.

11030. Therefore I hardly think it is necessary, at any rate as far as I as Chairman am concerned, to ask you to go through all the various items of the work that has been carried out in your county, but I should like to ascertain from you whether there are any special features of your work to which you would like to draw the attention of the Committee?—I will give you just the special features, if I may. In the first place our education in horticulture, perhaps, may be considered of a twofold character. We have our college for East Sussex, where we have the sons of farmers and tradesmen.

11031. That is at Uckfield?—That is so. I am there for two days of the week, and the remaining three days of the week I am in the rural districts amongst the villagers. We have about five acres of garden and orchard land attached to the College. The students attend the lectures in the morning, and they are forced to do practical work in the afternoon two days a week in these gardens and orchards. With regard to the work in the rural districts, the indoor lectures begin in October and they continue until April. The class of people who attend are farmers, estate agents, and the rural population generally. I might, perhaps, say that the established market gardeners and the fruit growers do not look upon horticultural education altogether favourably. They fear further competition.

11032. Is the whole expense borne by the County Council?—Yes.

11033. Then the people who attend the lectures pay nothing?—No, nothing.

11034. Is the door thrown open to the public—can anybody walk in?—Exactly.

11035. Are you sure that you always get the right people?—As a rule we do; people will not trudge along country lanes to attend a lecture out of mere curiosity. Of course, I do not say that everyone derives benefit from them. Some years ago we used to charge a fee, but we aimed at educating the working classes, and where a man earns 13s. a week, if you ask 3d. from him to attend a lecture, he will say, "No, I will not go." Threepence does not appear much, but it is a great deal to a working man. Therefore we had some trial lectures that we threw open, and they were well taken up, and they have gone well ever since. Our average attendance is about 40 per night.

11036. To take a typical rural district such as you are

referring to, are there many farm labourers in such a district?—Yes, they are mostly farm labourers.

11037. Are they large farms in your county?—They are principally country estates. We have a large residential population, and in a great many cases they would be labourers employed on the estates of the rich people.

11038. These men have gardens generally attached to their cottages in that part of the county, I suppose?—Yes, and in places, of course, there are some small holdings, and when you get near to the towns, where the scenery is not so good, we get farmers proper; but in the districts where there is good scenery the estates are principally owned by private people, and they live there.

11039. What do these labourers grow in their gardens—how do they use their gardens—do they consume the produce, or do they sell it?—If they are a long way from a town centre they usually consume their own produce, beyond, possibly, some potatoes that they might sell; but directly we get near to a town, where there is a chance of disposing of produce, then we find some of the best of them gradually acquire more land and become small market gardeners.

11040. You have large towns on the coast?—Yes, that is the principal outlet.

11041. I think you have not any large towns in the centre of your county?—No, the outlet is along the south coast. We get a large number of people in the seaside towns there in the summer time.

11042. Except for the coast towns, the county is principally a residential county?—Except the coast and the Downs.

11043. Are the farms principally sheep farms?—Yes. In order to further educate these people in the rural districts with regard to fruit growing, we found they could not all get to the Uckfield College—these agricultural people are slow to move away from their own parishes—and we established five centres for growing fruit on trial. These plots are a quarter of an acre in extent, and there is a mutual agreement with regard to the cultivation of the trees. The establishment of the plots cost the county about £15 each, and they are worked in this way: The county buy the trees and do the washing and the pruning, and the farmer does the cultivating and finds the farmyard manure. The county pay a nominal rent for these plots, and the farmer will have the fruit in time; but we reserve to ourselves the right to have 12 fruits from each tree for research purposes, if we want them, so that by having these plots we can show the people which kinds will do best in each particular district, so that they need not go and buy the wrong sorts in the future, as they have done in the past.

11044. How long have these plots been established?—Some have been established for three years and some for two years.

11045. Not long enough yet to be of any great value?—

Mr. W.
Goaring.

26 June, 1907

No; but three out of five of them have been extended by the property owners, and there is another one on the Marquis of Abergavenny's estate, which is going to be extended a further seven acres this autumn.

11046. You cannot get in three years any great scientific results?—No; but we are quite convinced that it will answer, and we are taking time by the forelock.

11047. You have five acres attached to the College at Uckfield?—Yes.

11048. Is any of it grass land, or is it all cultivated?—It is nearly all cultivated, but we have grassed some down for the purpose of showing the difference between a crop on cultivated land and on grass land, and that difference has been most marked.

11049. Do the reports on these fruit stations and things come up before the Education Committee?—Yearly.

11050. Are those reports discussed at all—is interest taken in them?—Yes, but as you rightly said just now, the plots have not been established long enough to be of any great scientific value yet.

11051. Is the work that has been done at the College fully discussed by the Committee?—As far as my department goes, it is.

11052. Although your county is a residential county, I presume there are a certain number of ordinary tenant farmers both large and small in the county?—Yes, a great proportion of these estates are let off, and we gradually get a very much better class of farmer; we find that the younger farmers are a very much more enterprising class of man than the old ones—a very different class altogether.

11053. Do they grow fruit on these farms?—Yes, in many cases they do, and there is a tendency to plant more fruit trees.

11054. You have some suggestions to make as to how your work can be developed and improved?—Yes. In the first place, as far as what I might term the better class sons of farmers are concerned, they should be taught in some way to use their brains better than they are now. The system of elementary education somehow does not seem to encourage them to use their eyes, and they do not seem to acquire the power of observation.

11055. You are speaking of farmers' sons?—Yes.

11056. I suppose the sons of these farmers that you are speaking of go in the first instance to the elementary schools?—I think so.

11057. Do any of them go on to the secondary schools?—A few, whose parents can afford it.

11058. A good many do not?—That is so.

11059. How do you suggest that that should be remedied?—By offering increased facilities for attending the secondary schools and granting scholarships to suitable applicants, if they need them.

11060. Who should grant those scholarships, do you think?—I take it the funds would come from the county.

11061. Your idea is that this Committee should urge that the County Council should provide scholarships to enable, at any rate, the most intelligent of the elementary school children to get further and improved education?—Yes, the brighter lads.

11062. Do you suggest that education should be of a general character or of a technical character?—Both; when I say general I mean to say they should go to the secondary school and they should get a further insight into ordinary education; and with regard to the technical character of their education there should be in some way plots of land, so that they could see examples of cultivation carried out upon them. Those remarks would apply to the sons of farmers who will ultimately become employers of labour.

11063. Your next suggestion is: "A well organised system of education by travelling lecturers and demonstrators for the benefit of the rural population generally?"—To my mind we must do something for the sons of the labourers who, perhaps, will have to stay in the villages all their lives. If we are going to keep the people on the land, I suggest that a well organised system of education by travelling lecturers and demonstrators for the benefit of those persons in rural districts who cannot attend any college or central educational institution should be instituted.

11064. Lecturers and demonstrators in what subjects?—I am dealing with my own subject.

11065. Quite so—you do not propose that they should

give lectures on Shakespeare, for example?—No. Another suggestion is the formation of fruit and vegetable trial stations in districts where they are required; that is to say, where there is a likelihood of horticulture increasing; I would form plots somewhat similar to the five we have now, and let them be conducted on similar lines.

11066. Is that suggestion intended to apply to the whole country?—Yes.

11067. You do not limit your proposals to your own particular county?—No; I make that proposal in order to educate the sons of the working classes, so that they shall become better and more intelligent workmen. Another suggestion is the establishment of evening winter classes for lads, to be followed by the cultivation of fruit and vegetables on the individual plot system in the summer; that is to say, we would have lectures in the winter, working to a syllabus, and in the summer the lads should carry out practically what they have been taught theoretically the previous winter.

11068. Do you think you would get the working boys in the county districts to come to these classes?—If you get hold of them when they leave school, before they have had time to get into loose ways, you will get them.

11069. I suppose in the country districts when a boy, has done his work he goes home and washes and has his tea?—Yes.

11070. Can you get him to come out again, except to loaf about the village?—In country villages it has become quite the usual thing for the owner of the village or a property-owner in the place to establish a parish hall, a working men's club, and that is the rendezvous for these lads at night. Those are the places where we find the lectures take best, and we get the lads there.

11071. You know, as a matter of fact, that they do go to these places?—Yes, I am giving lectures three nights a week in the winter, and I have done so for 15 years, and the establishment of these village halls is one of the best things you could have in country villages. The young fellows go there instead of going to undesirable places.

11072. You have limited your observations so far to boys. Have you considered any proposal as to dealing with girls?—I have not.

11073. Are there any other suggestions that you would like to make?—With regard to the education of the sons of these farmers, provided they went still further and attended some agricultural college, as far as I am aware the education in the colleges now is to a certain extent of a theoretical nature; there is a vast difference between learning how to grow a thing and how to turn that produce into money. A man may be a first rate cultivator and a very smart man, and may be able to grow some splendid crops, but unless he has some business training he will not be able to turn that produce into money, and I suggest for these more advanced youths, if they are going into business for themselves, that there should be connected with each college a tract of land, say, from six to ten acres where horticulture can be carried on, not from an experimental point of view, but from a commercial point of view, where the produce could be grown as a producer would grow it and be sold in the ordinary way of commerce. A lad now may have a first rate training, but directly he starts in business for himself he is lost when it comes to a matter of selling his produce. These salesmen and the men who have been buying have been accustomed to business methods, but the man who has had nothing but college education is not accustomed to business methods, and to my mind all the experimental gardens in the country will not make him a business man.

11074. You are thinking principally of fruit growing, I presume?—And vegetables.

11075. Not of farming in the ordinary sense of the word—not of stock breeding, for example?—No, I am alluding to my own subject.

11076. (By Mr. Latham.) Are you not taking the work out of the father's hands? The father, certainly, ought to teach his boy the business part. We are getting to a very low ebb if we are obliged to teach the young agriculturist how to be a commercial man?—But we get many men whose fathers are employed in the city, who have no material to teach them upon.

11077. You are talking of a class now who are not horticulturists at all?—Yes; because we get lads whose parents are not engaged in horticulture.

11078. (By Lord Barnard.) You think it would be rather hard because a father earns his living in the City that he should not have, if he wished it, some of his sons educated

Mr. W.
Goaring.
—
26 June, 1907
—

on the land?—Yes, and I think this plan of having five to ten acres of land where the commercial side could be taught as a finishing touch to his education would be of very great advantage; the father would probably lose any money that he might lay out for his son if the boy did not have that finishing touch.

11079. Is that all you have to add?—I think so.

11080. You told us that you work two days a week in the College?—Yes.

11081. That is, lecturing in the morning on theory?—That is so.

11082. The boys devote the afternoons to practice?—Yes.

11083. What is the nature of the lectures—budding and grafting, and that sort of thing, and chemistry?—Not chemistry—the chemist takes chemistry.

11084. Yours is purely horticultural work?—Yes; the first year we dealt with garden soils, draining, working the land, suitable manures for various soils, suitable crops, suitable seeds for vegetable culture, raising and pruning various fruit trees, and the cultivation of various vegetables. The students mostly come for two years. This is a copy of the syllabus (*handing same*). You will see there the subjects for the second-year students. That is an outline of the lectures for two years.

11085. Have you followed up any of your former pupils in their after careers at all?—Yes, we have several of them about the county now.

11086. Do you know whether they are doing well?—Yes, they are doing well.

11087. As fruit growers?—We teach horticulture as an adjunct to farming. We do not do it as they do at Swanley. We go in for fruit and vegetables only.

11088. As you have told us, every farmer grows more or less fruit?—They do.

11089. You think, commercially, in after life, the course of instruction that you give them is an advantage to them?—Undoubtedly, and to the property-owner as well.

11090. In the case of a man whose father has been a fruit-grower and farmer, do you not think that the lad learns his business partly by observation of what goes on in his own home, and partly by a sort of hereditary instinct?—Quite so, but he need not go to this piece of land unless he chooses.

11091. That is only for those who have not got the opportunity of learning it practically at home?—Yes. I have seen so many cases where lads, when they come to deal with their produce, fail.

11092. Have you thought of any system of apprenticeship—of a lad learning fruit growing under a practical man by being apprenticed to him, as is done in so many other businesses?—Possibly it might answer.

11093. One suggestion made to us with regard to farmers was that it would be a very good plan if the County Councils were to provide scholarships in the nature of apprenticeships really, and to select a good farmer, and to give scholarships to those lads who were likely to benefit from them, and put them with that farmer to work under him and learn the business by being in daily contact with the farmer on his farm?—That would meet my case if a very careful selection was made, but unless a very careful selection was made we should get back again into the old groove.

11094. You would say it must be a *sine qua non* that the farmer should be a progressive man, and not one of the old type?—Decidedly.

11095. I see from the Report of the Board of Agriculture on another county in England that the County Council lecturer pays visits to private gardens and allotments, and gives advice; do you do anything in that way?—We do not touch private gardens; they must look after themselves. We go to market gardens and allotments and not to private gardens.

11096. Do you not think such a system might be useful?—It might be, but we contend that if a man can keep a private garden he can afford to keep it going himself.

11097. You mention in your syllabus insect and fungoid pests?—Yes.

11098. The owner of a private garden can keep his garden going so long as the insect and fungoid pests do not come along and ruin it. The private garden owner usually is a large ratepayer, and do you not think he is entitled to advice if he pays for it through the rates—

perhaps you have not thought of that aspect of it?—I have not.

11099. I have had some experience of that kind in connection with forestry, and we find the advice we have got has been most beneficial; however, you have not considered that?—I have not.

11100. (*By Mr. Norman Lamont.*) You said in reply to Lord Barnard that you do not pay visits to private gardens; does that apply to market gardens and allotments?—No, I was only referring to private gardens, a private garden maintained by an owner for his own private use.

11101. Do you visit allotments for the purpose of giving advice with regard to insect and fungoid pests?—Yes, it is my duty to do that. My arrangement is this, that if a farmer can afford to pay the travelling expenses, I am to charge it to him, but if he is a poor man, a small allotment holder, the expenses are charged up to the County Council.

11102. (*By Mr. Davies.*) Is the question whether the market gardener or the allotment holder to whom you give advice is to pay a fee or not left entirely to your discretion?—There are no fees. It is simply the bare out-of-pocket expenses, and whether those should be charged to him or not is a matter for my discretion.

11103. So that you cannot get any financial support for your work from that source?—No.

11104. Do you not think if you were to charge a fee that you might be able to employ an assistant, who would also go round and give advice as to diseases, &c., and thereby assist in developing your work?—I am afraid if you made a charge they would rather let the enemy go on than ask us to come and advise them about it.

11105. You told us you thought the young men before they had finished their training ought to have some sort of commercial experience on special plots?—Yes.

11106. Could not you bring that about better by some system of co-operation amongst the farmers themselves?—In what way? I did suggest to have these lads at some central institution to be maintained by the county—for the brightest lads, or the sons of people who could afford to put them into business.

11107. I thought your point was that they were not able to sell their produce to advantage after they had finished their training, and it seems to me that if they co-operated they would be able to open up a much better channel for the disposal of their produce than if they attempted to deal with it individually?—Decidedly they would, but even then they want instruction in business ideas. If the whole co-operative body consisted of men without business ideas, I am afraid they would not move very fast.

11108. (*By Mr. Medd.*) What is the duration of your winter course—how long do the winter classes last?—Five weeks. We go to each successive place for five weeks; five Wednesdays, five Thursdays, and so on.

11109. Have you thought of developing them so as to form a winter school of horticulture?—Yes, we have thought of it. Those winter schools seem to take very well in colder counties, but in Sussex we get such mild winters that we find they do not take very well.

11110. We have had very interesting evidence here with regard to the winter schools in North Holland, where the climate is inferior to the climate in East Essex; have you heard of those schools?—I have.

11111. They work in a co-operative method of production and distribution, and they are able to sell their produce at a profit at Covent Garden when our fruit in Kent and Sussex is rotting on the ground?—I quite believe that.

11112. You know that to be the case?—Oh yes.

11113. Do you not think it would be worth while to make an effort this winter in some most favourable locality, to establish what I call a permanent winter school of horticulture—you have broken the ground already?—Quite so.

11114. You have told the Chairman that your classes are widely appreciated?—Yes, we get an attendance of about 40.

11115. Do you not think you would be doing a great deal of good not only in your own county, but as an example to the rest of the country, if you could establish what I call a permanent winter school for the county?—It is certainly worth consideration.

11116. I hope you will consider it, and if you have any spare leisure I would suggest your visiting such a school

as the one at Naaldwyck, near the Hague, in Holland. You would get there and back in three days and be able to spend a day there, and I am sure you would see from the whole organisation that it is quite applicable to this country. It is no use my explaining their methods just now, but if you should happen to go you would see exactly what they do, and I would be pleased to give you an introduction, and to see that everything was placed at your disposal for obtaining the fullest information; I think it would be quite worth your while to go.—Thank you very much.

11117. You have, I understand, central, or village halls in the country districts?—We have.

11118. You could utilise those for the permanent winter school. I understand you do not have many school gardens in Sussex?—That is so.

11119. What is the reason for that?—It does not seem to meet with the approval of the powers that be in Sussex. It has been brought before the Committee several times but nothing has been done and, latterly, since the 1902 Act came in, the pupil teachers have had the great share of the "whisky money," and we have had nothing with which to establish them.

11120. The school gardens would come entirely out of the elementary rate?—Yes.

11121. With all your horticultural interest, do you not think for purely educational reasons, as distinct from technical reasons, it would be worth while trying to establish gardens at a few of the most favourably situated schools?—It might, possibly, but I am bound to confess that I have had no experience of school gardens. I have been in Sussex for 15 years, but we have never had any.

11122. You live next door to Kent?—Exactly.

11123. In Kent they have excellent school gardens?—I believe they have.

11124. If you were to go to the Orlestone School, or the Chislehurst Road School at Orpington, you would get the very best idea in England how to conduct such a school garden, and the expense is infinitesimal. It amounts practically to nothing, and of course the object there is educational, not technical?—Quite so.

11125. I see you do nothing for the training of teachers?—We do not.

11126. Could you not utilise Uckfield for that purpose?—That is a question for the Committee.

11127. You cannot have an efficient school in any respect unless you have a properly-trained teacher?—That is a question that is hardly for me.

11128. It is worth consideration; you realise of course the necessity for instruction in packing, grading and generally in business methods?—Quite so.

11129. It only occurs to me now to mention that as one of the essential subjects connected with such a winter school of horticulture as I suggest, I should start with one only, and select a locality for it where you have aroused most interest?—Yes.

11130. Do you send any of your girls to Swanley—you mentioned Swanley?—I know nothing about the girls.

11131. You do not know whether any girl scholars are sent from your county?—No.

11132. Have you visited Swanley?—I have given a number of lectures there.

11133. You have seen there that there is very effective horticultural instruction given?—Yes. My experience was when I gave lectures there that the girls really worked better than the boys.

11134. They are only girls there, and if you go down there now you will see the finest lot of girls at work that you ever saw in your life?—No doubt.

Mr. W.
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26 June, 1907

Professor J. R. CAMPBELL called and examined.

11135. (*By Lord Barnard.*) Would you kindly tell the Committee the appointment you hold?—I am Assistant Secretary in respect of Agriculture under the Department of Agriculture and Technical Instruction for Ireland.

11136. For how many years have you held that appointment?—Since 1900.

11137. You are naturally, I understand, fully acquainted with all the circumstances of agricultural instruction in Ireland?—I am.

11138. You know, of course, the terms of the reference to this Committee?—I do.

11139. You have heard the subject discussed, I daresay?—Yes.

11140. You know the points upon which this Committee desire information?—Yes.

11141. You will not be surprised at all if I tell you that the Committee think it not only desirable but essential that they should know and report to the President of the Board of Agriculture in this country what is being done in the neighbouring isle of Ireland to carry out this agricultural work?—What I proposed to do was just to give a very brief statement of the agricultural education work of the Department, and then perhaps get into some description of the actual schools and classes that are at work. I do not think I need trouble you with regard to the constitution of the department, and the various methods by which funds are obtained. That, I think, is not necessary.

11142. No. I think, perhaps, when we have heard what you have said, if we consider it necessary we may ask you just one or two questions with regard to the constitution?—Yes. At the outset I may say the funds of the Department are approximately an endowment of £100,000 per annum. I think at the present time it is £107,000, owing to a certain interest on surplus having accrued. There is also raised by a local rate in every county in Ireland a total sum for agricultural purposes of about £32,000 per annum. The amount raised by the rate for all purposes is, I think, £39,000, but a portion of that is set aside for technical instruction in the technical schools, not agricultural instruction at all. I think last year the actual sum set aside by county committees of agriculture who

were appointed by the County Councils, who raise the rate, usually a penny in the pound—was £32,000. Perhaps I might briefly describe on what these sums are spent, and you will see how extremely difficult it is for me to separate it from the general expenditure that you in this country would describe as technical instruction in agriculture proper, because mixed up with all our schemes of instruction we have the application of monies for the improvement of live stock and a variety of other things, and it is exceedingly difficult to see what is technical instruction in agriculture and what is not. Take, for example, in Ireland, the live stock schemes; I think we subsidise close on 1,000 pure bred bulls. These cost the country about £15,000 per annum. Some people would not consider that agricultural instruction, but our Department does consider it agricultural instruction, because there are about 17,000 of these animals in Ireland altogether, and our object is to educate the farmer to use a better animal by placing out about 1,000 first-class animals in the country. We do the same with horses, with sheep and with swine, and with regard to the poultry instruction, we carry on very much the same system as you do in England, but associated with that we have about 500 farms for the distribution of sittings of eggs. That, of course, costs a good deal of money, but all that we call agricultural education, and if you desire it I will make a careful analysis of these figures, and take out just that amount under each heading which in this country you would consider as coming strictly under the head of agricultural instruction. I am not prepared to do that at the moment, until I know exactly what it is you require. I will just briefly run over the items upon which this endowment of £100,000 and this sum of £32,000 from the rates are spent.

11143. Do you mean that a portion of the sum raised by local rates is handed over to you to administer?—Yes, part of our fund is from local taxation and is not given to the County Councils to administer, as is the case in this country, but is given to the central Department to administer through County Councils on schemes approved of by the department, and it is given on condition that each county participating must raise a rate for the same purposes. No money is given to any county unless a rate is raised, and as I have said before, the usual amount is about 1d. which last year amounted to £32,000 for

Prof. J. R.
Campbell.

11142a

11142b

11143a

Prof. J. R.
Campbell.

26 June, 1907

agricultural purposes. Of the £100,000—I am dealing with the Department's endowment, not with the £32,000 raised by the rate—about half is given to county committees of agriculture for instruction in, and improvement of, livestock, for itinerant instruction in agriculture, for agricultural classes for young men, for poultry schemes, butter-making schemes, horticulture, and bee-keeping, prizes for cottagers and small farmers, subsidies to agricultural shows, the improvement of flax, for the administration of the Fertilisers and Feeding Stuffs Act, and the general administration expenses of the local secretaries of the County Committees. That takes up about half of the £100,000. The remaining £50,000 is spent directly by the Department and from time to time as the Department initiate central schemes and get them well established they are transferred to County Councils. The Department usually start all these schemes themselves, and once they are organised they hand them over to the County Council with an intimation that so long as they are administered well the Department will pay a proportion of the cost.

11143b Now to come to the second £50,000, about £10,000 is spent in supplemental schemes in the poorer districts in the west of Ireland; about 22 special agricultural instructors are engaged in those districts; there are 8,000 to 9,000 demonstration plots of various kinds in these poor western districts. A very large number of special bulls, boars, rams, stallions and Spanish Jacks are placed out for service. In addition, a number of schools for girls are established for the giving of girls instruction in farmyard lore, such as butter-making, cooking, gardening, poultry-keeping and so forth. Then as to the improvement of livestock the central expenditure is a sum of £7,000, for schemes of inspection of sires and so on. All the sires that are used for service are inspected by veterinary surgeons annually.

11144a Are those sires private property?—Yes; any person having a good sire can submit him for service provided he has first sent him in for veterinary examination. Then there is a central stud farm, and also a scheme for the registration of dairy cows. We are trying to establish a herd book of Irish milking shorthorns. All these account for the £7,000 that I have mentioned. Then agricultural schools proper take £18,000; on agricultural schools for girls is expended about £4,600; on forestry about £3,500; on agricultural organization £3,700.

11145 Is your agricultural organization society similar to the voluntary society in this country called the Agricultural Organization Society?—It is much the same thing; the Department subsidises it to the extent of £3,700, with representation on the committee.

11146a That is principally for the encouragement of co-operation?—For the encouragement of co-operation, and mainly for the encouragement of credit societies—very largely, at any rate, for credit societies. Then for the improvement of creameries, of which we have a large number in Ireland, for surprise butter competitions, which are held very regularly, and for inspectors, instructors, courses of instruction, etc., £6,000; for special investigations in flax growing, cheese making, barley experiments, potato experiments, pig feeding experiments, peat experiments, tobacco experiments, seed testing, analyses, cattle mortality, technical aid to industries, and fruit preserving and horticulture. The department have themselves planted on a commercial scale about 100 acres of fruit, and the management of that, of course, costs something—then poultry, instruction in the grading and packing of eggs, instruction in the flaying of hides, and a variety of other things, accounts for £9,000. The marketing of Irish produce in Great Britain in the form of shows of agricultural produce held at the various centres—Leeds, Manchester, Newcastle, Swansea, Cardiff, and other big centres—£3,000. Pioneer lectures—that is not under the County Council at all, but is done direct by the Department—£3,000. Detection of frauds in produce sold in Great Britain, £1,500. Detection of frauds in produce in Ireland, £700. Special assistance to shows, exhibits, demonstrations, etc., £2,000. Travelling of representatives of special committees, £200. Rural industries, £3,000. Grant in aid of manual instruction on domestic economy in rural districts £7,500, and Sea and Inland Fisheries and miscellaneous take up the balance. I have simply run over that to show you the variety of work on which all this money is spent and how difficult it would be for me to pick out any special item as applying specifically to agricultural instruction.

11147 It seems to me that the Department with which you are connected considers that the subject of agricultural instruction is so closely entwined with the general principles of providing information for farmers that the two can hardly be separated?—Quite so, and we apply

money for the direct improvement of stock. For example, at some of our agricultural schools we will supply them for the purpose of service with, probably, a high-class thoroughbred sire, costing perhaps £400 or £500, and also in the case of breeders of pure-bred cattle we will probably supply them with a high class stock-bull for service costing about £200 or £300. We regard that as an instruction. In everything we do the educational side is kept to the forefront, but I need hardly say that many of the recipients rather look to the favours than to the instruction, and there is often a conflict between us on that ground.

11148 Is any fee paid for this service?—It depends upon the position of the recipient; there are no fixed terms. One of the first, and, I need hardly say, one of the most important pieces of work the Department took up was that of providing systematic instruction in agriculture. The first year was largely devoted to studying the conditions and the facilities we had for carrying on the work. After a considerable amount of thought, and taking all the circumstances into consideration, the policy which the Department decided upon was as follows: first to provide 11148a at one central institution the highest form of technical education for the training of men who are to become teachers and specialists in agriculture. This has been done at the Royal College of Science in connection with a farm and agricultural college at Glasnevin. Some of these colleges are provided for annually in the vote and are not charged to the Department at all, but the Department provides some of them. The sons of farmers have three years' training there; they have to undergo an entrance examination and to undergo also a practical examination in agriculture. All these men have to be subjected to a test on the farm. They have to plough and partake in all the operations of the farm. Then they are trained as specialists, and they are then either used in our agricultural schools or employed by County Councils as itinerant instructors. That is the one school for providing the highest form of agricultural education.

11149 Do they take a degree at that school?—No, it is an associateship, exactly the same as at the Royal College at South Kensington, here—there is no degree.

11150 What is the number of students?—There have been trained, passed, after a three years' course, 34 men, and at present there are 29 in training. All these men find employment immediately under the County Councils. The 34 are now all at work under the County Councils or in agricultural schools, and the 29 men who are now in training I could find appointments for to-morrow, if they were finished, and I expect there will still be a demand for two or three years to come.

11151. (By Mr. Medd.) What is the total annual cost of maintaining the college?—Do you mean the cost per student?

11152. I only care for the total cost of maintaining the institution?—I could scarcely give you that; there are three faculties in it; the faculty of engineering, faculty of chemistry, and the faculty of agriculture.

11153. What would you estimate the total cost in reference to the faculty of agriculture to be?—I could work it out for you.

11154. Perhaps you could kindly send us that figure later?—Yes.

11155. I wish to compare it with the total cost of similar institutions in England?—Yes.

11156. (By Lord Moreton.) Might we also have the figures showing the average number of students?—Yes. The Royal College costs, I think, £11,000 per annum.

11157. (By Lord Barnard.) Where is the College?—It is in St. Stephen's Green, Dublin, and they are now building a new one. It is maintained by an annual vote from Parliament; this is not a part of our endowment at all.

11158. (By Mr. Medd.) The statistics in regard to the annual cost of maintenance are somewhere available?—Yes, it is in the annual Parliamentary list of votes for the year. I can easily get it for you—here it is. I have it here: salaries and wages, £11,573—this is the Treasury vote, you know; apparatus, £1,500; prizes, scholarships, and examinations, including summer courses, £3,579; travelling, £250; incidentals, £260; total, £17,162. That is the total cost of the institution, the Royal College of Science.

11159. That is for the whole institution, of which there are three faculties?—Yes.

11160. You have no means here of estimating the portion

of that which would rightly be attributed to agriculture? It would be a matter of some difficulty to apportion it, because you could not distinguish the students in the first year from agricultural students.

11161. You dovetail one into the other?—Yes, in the first year they study science without reference to agriculture.

11162a. You might be able to give me an approximate statement of that hereafter?—I think I could. That ends the Royal College of Science, maintained, as I have just pointed out, not from the Department's endowment, but out of the Parliamentary vote. The scholarships amount to one guinea per week. The fees are £15 the first year, £20 the second, and £20 the third. Then the second proposal was "To provide at least one high-class agricultural college which would form a stepping stone to men desirous of entering the Royal College of Science, as well as men, the sons of well-to-do farmers, who wish for an education to enable them to manage their own farms, and men who desire to become creamery managers, or who wish to have a special training to fit them as horticultural or poultry experts, stewards, land agents, or other occupations in connection with agriculture." This has been done at the Agricultural College, Glasnevin. That college has been maintained out of the Department's endowment; the cost of it is about £3,000 per annum. It maintains from 50 to 60 students, and the horticultural school attached to it costs about £1,000 per annum. It corresponds to the residential agricultural schools in this country, such as the one at Holmes Chapel, and some others.

11163. (By Lord Barnard.) Not to what are marked on that map as university colleges, such as Reading?—No, the Royal College of Science is of the university standard, and corresponds more to the education given at these centres on the map. But of course in Ireland we have only one college. We concentrate on one college instead of having many centres as in this country.

11164. (By Mr. Medd.) The college of Glasnevin is more of the intermediate type, such as Holmes Chapel?—Yes, more of that type. A man who is trained there would not be permitted to take up any appointment under the County Council, because he would not be considered to have had a sufficiently good scientific training.

11165a. 11165. (By Lord Barnard.) He would not be qualified as an instructor?—He is not qualified as an instructor. Then thirdly, "To provide provincial institutions at which young men who can be spared from the farm for one year can be taken in as apprentices, taught agriculture, both practical and technical, at a fee proportionate to their means." This work, which had to be delayed until teachers were trained, is now in progress at three such institutions, and the provision of others is in contemplation. These are described in the Department's publications as agricultural stations. At these institutions the young men who are taken in have to do a large portion of the work on the farm.

11166. Neither of the two institutions which you have previously mentioned have any land, apparently?—The Royal College of Science has no land, but the Albert Agricultural College at Glasnevin has; it has a farm of about 170 acres, and that farm is used by the Royal College agricultural faculty, so that the farm there serves a double purpose.

11167. (By Professor Middleton.) The Royal College has actually a field attached to it, has it not?—It has access to a field and has educational privileges there, but the farm is essentially the farm of the Albert Agricultural College itself.

11168a. 11168. I thought Professor Wilson had one experimental field?—No, he has simply the use of the whole place. The young men are taken into the Agricultural Stations just referred to for 12 months, beginning in October, and going on practically until the harvest is completed, so that they have practical work for 12 months. The fees are as follows: Where the aggregate valuation of the boy's parents or guardians does not exceed £20, the fee is only £3; where it exceeds £20 but does not exceed £40, the fee is £6; where it exceeds £40 but does not exceed £100, the fee is £10; where it exceeds £100 it is £15, and for apprentices who are not the sons of farmers, £20. You see the fee is graduated. We have a rooted objection to giving scholarships. We do not give scholarships. Everyone must pay something, and in order to meet the charges of those who, like the very small farmer in Ireland, cannot afford to pay, we reduce the fee to £3; it is to all intents and purposes a scholarship, but we will not allow anybody in without paying some fee proportionate to his means.

11169. What is included for the fee?—For that small fee he receives board and residence on the premises, and education, but of course he has to work more than half a day on the farm; he is called an apprentice to farming. Before he is admitted he must pass a preliminary examination of a very simple character, and what is more important, he must produce a certificate to satisfy the Department that he has good prospects of becoming the occupier of a holding in Ireland, and he must get the instructor for the county to sign a paper that he has attended his courses and has made satisfactory progress. I need hardly tell you that if we did not do that we would have these schools filled with all sorts of young fellows who would be reared at the public expense. As it is, we have some difficulty in getting boys and in getting these places filled. We only started it three years ago—it was the third suggestion in our programme, so to speak—and we have not got them filled yet, because the difficulties of getting in apprentices are very great. We consider if we only turn out 30 or 40 from these institutions, and that all those are actually going to take up small holdings, it is better than training a large number of young men who are going in for various appointments, and who may be using the school as a stepping-stone to some other occupation. We will not even employ the young men from these places for the County Council work. We have one of these agricultural stations at Ballyhaise, County Cavan, one at Clonakilty in Cork; we are just building a large one at Athenry in County Galway, and we have inspected land in half a dozen places with a view to establishing others. One of the reasons that we are not pushing on with them is that we have not yet been able to train a sufficient number of teachers for our work. The number of vacant posts in Ireland is still far in excess of the supply, and besides, I myself think we are going quite fast enough, and that three is quite enough at present. That is three types of schools that I have described. Then the fourth is, "To provide winter schools of agriculture where the sons of farmers could obtain technical training at small expense during the winter months, when they can best be spared from the farm work." Twenty-eight of these schools were in operation last year in 12 counties. These are not residential, of course. Before a county is allowed to start schools of that kind it must have had two years at least of the work of an itinerant instructor in the county in order to prepare the ground. After he has had two years' training there—I call it training, because we look upon it as much in the light of training for the men themselves as of instruction for the farmers—after he has had two years in the Royal College and two years itinerant instruction to farmers he is then usually allowed to hold systematic classes during the winter months for the sons of farmers who can only be spared for about 20 weeks.

11170. (By Mr. Medd.) Is it not the fact that one great reason for the success of the development in Ireland has been owing to your ability to bank sums annually, and not expend annually the total amount allocated to you?—I do not know that I could answer that in the affirmative at all. It is not quite fair to say, as I always hear it put, that Ireland is better treated than England in this respect. England is far better treated than Ireland, but it is because you give the money away to the County Councils. I want to make that point first. The total amount of money available for agricultural education in England is infinitely greater than that available in Ireland, because the County Councils in England get very large sums of money, which they may apply as they choose, but you put no compulsion on them. They may do what they like with the money, and the central authority have no control over them at all, whereas in Ireland it all goes through the central authority who has the power to withhold it from them, or give it to them according to the way they make use of it.

11171. Has not your work been facilitated by the fact that you have been able to bank and hold back sums allocated to you annually, rather than to expend the whole annually—you have been able to have a reserve fund upon which you could draw, as experience showed in what directions it might be most usefully applied?—Yes, it has helped us very much in the development of the work, because we were able to say in the early years, "You shall have no colleges until you have trained teachers; you shall have no agricultural schools until you have had itinerant instructors," and now we have got to what I will call the brick-and-mortar stage.

11172. That has been an enormous assistance to you in the development of your work?—Certainly.

11173. Probably you are aware that in England the whole of the sum allocated annually has had to be applied

Prof. J. R.
Campbell.

26 June, 1907

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11169a

11169b

Prof. J. R.
Campbell.

26 June, 1907

annually, whether the local authority had any useful purpose to allocate it to or not?—Quite so.

11174a (By Lord Barnard.) You were dealing with No. 4, as to the winter schools of agriculture?—Yes. They correspond very much to the short courses that are held at some of the agricultural colleges in Great Britain, but they differ in this way, that they are held in the centre itself, in the rural districts. Usually a good rural centre is selected, and a room or one or two rooms are hired, and there the agricultural instructor or teacher sets up his classes for the winter. It has this great advantage, that if it does not succeed there is not any great expenditure on buildings or equipment. But we find that they are succeeding, and it is only the want of teachers that prevents it being spread over all the counties. Twelve counties have now taken up this work, and every one of the counties is willing to set aside money for it out of their rates, if the Department will permit it. Then No. 5 is—I am recounting the policy the Department sets itself out to do—
“To provide one central higher institution for the training of women in the domestic economy of the farmhouse, and in work which falls to the lot of women to perform in connection with the farmyard, as, for example, dairying and poultry keeping.” This provision has been made at the Munster Institute, Cork. That is a school for women only, where butter making, farm house keeping and dairying, and various other subjects are taught. The school costs £3,000 per annum. It is a residential school. There are places for 50 girls, and for the last four years I should say that we have never had less than 200 or 300 pupils awaiting admission. So congested has the place become that we have just recently purchased land for the establishment of another in the North of Ireland, which will be called the Ulster Institute. It is simply to relieve the pressure of the demand that exists for the training of women. These women very often become private dairymaids, and a very large number of them find employment as dairymaids in creameries, and of course in other work as well.

11175. (By Mr. Latham.) Do you have the same restriction that they must be able to find employment in Ireland?—No, we cannot make any restriction in their case, because they might get married; we cannot place restrictions upon them as we can in the case of the men.

11176. (By Lord Barnard.) Do they pay fees at that institution?—Yes, the payment at that institution is about 12 guineas per annum; it is in quarter terms; there are four terms in the year, and if at the end of the first or second term they are not making progress they are turned out. Some of the best of them are kept on for seven or eight terms, and they then find employment as teachers under the County Council and the county committees. I have never seen such a demand as there is for the class of education that is given at this school.

11177a The Munster Institute is not a new school, is it?—No, it is an old school that the Department took over. When the Department took that institution over they found that half the year it was for men and the other half for women, and the same at Glasnevin; and in order to better utilise these institutions one was equipped and staffed entirely for women and the other entirely for men. Then, sixthly, “To provide for young women education in domestic economy and farmyard lore at residential and day schools.” This has been done at a number of institutions, while the equipment of a number of others is under consideration at the present time, that is smaller schools dotted all over the country. The Munster School is more of a training school, and all over the country we have dotted down small residential schools taking in from 10 to 20 residential pupils and day pupils from the neighbourhood who may come in by train, or who may come in by donkey cart, and sometimes we provide a car to drive them in. There we have set down at any rate a first-class school in the centre of a populous district, and the girls who go there gain all the instruction which is useful to them in the work of the household and in the work of the farm; they are, so to speak, small agricultural schools for girls.

11178. How many of those have you?—At the present time there is one in Lough Glynn, in Roscommon; one at Westport; one at Claremorris; one at Portumna; one at Ramsgrange; and I think there are about five more than those I have mentioned.

11179. Altogether about eight or ten?—Yes, and some of them are in the course of construction.

11180. The object I had in asking was to ascertain whether you proposed to spread those all over the country?—Yes, they are now rapidly spreading, and nothing but the

want of funds will curtail their multiplication. Then the next is to provide a school of forestry for the training, not of expert foresters, but of woodmen. This has been done at Avondale, the home of the late Charles Stewart Parnell. We bought his property and house, and converted it into a residential school for foresters; we have levelled all the ground and planted it up in various plots, and we have bought some land in the neighbourhood, which is also being planted. There the apprentices do all the work on the place, and, in addition to board, they get a small sum a week. In summer they are not quite so busy, of course, when one cannot do so much planting or felling, and their work then is only in keeping the grounds clean and looking after the plantations.

11181. Do they have resident instructors?—Yes, there is a resident master who teaches science, and a resident master who teaches English and general subjects; and then there is an expert forester on the premises. The course is three years. All that, I may say, is done, more or less, under the direct supervision of the Department. Finally—perhaps I ought to have put this a little earlier, because it is one of the first things in our programme—to provide in each county, by a system of itinerant instruction in agriculture, horticulture, dairying, poultry-keeping, and bee-keeping, instruction for farmers and their wives, sons and daughters, who cannot avail themselves of other means of acquiring information. That has been done to a very large extent, and I think that every one of the counties has set aside funds for the purpose, although a few have not been yet able to get the instructors. I have already described how the agriculture instructor usually spends two years in itinerant instruction, and then, where the County Council wishes it, he may give systematic instruction in winter schools. Of course, that does not apply to the horticultural instruction, or poultry, or dairying, or bee-keeping, and that sort of thing. These men or women always remain as itinerant instructors, and never give systematic instruction. It is the agricultural instructor only who gives systematic instruction to the young men in these winter schools. Thus the Department have laid the basis of a graduated system of agricultural education by means of which the youth who is inspired by the work of the itinerant instructor may be able to obtain education in the local winter school of agriculture, from which he may graduate to the provincial agricultural school, thence to the Albert Agricultural College, or the Royal College of Science, according to his circumstances and his education. I may say that side by side with all this there is another side to the Department—the technical instruction side. That branch is carrying on simultaneously science instruction in intermediate schools, and we are beginning now in our agricultural schools and classes to find the advantage of technical instruction in these schools. At one time it was intended to go still lower with our agricultural education and to put it into these intermediate schools, but these intermediate schools are under an Intermediate Board and we would have had complications in the administration, so that that has not been done. In two schools only have we attempted it—one at Monaghan and one in Galway. Where we have grafted an agricultural side on to these intermediate schools it has not been so successful as one would like, and I am, personally, not in favour of prosecuting it until we get some better system of co-ordinating our system of education in Ireland. The same applies to the National schools. In Ireland our agricultural education began at the top with the Royal College and has spread down to the intermediate schools; we have only two of those at present as an experiment. We have never got into the National Schools—those are what correspond to the Board Schools in this country, largely because they are under commissioners whose work is in no way co-ordinated with ours. Of course, we could get to them, and no doubt they would be quite willing that we should give instruction to the boys in the National Schools, but it would interfere with their programme. The buildings would not always be suitable and at any rate up to the present, and pending the time when education in Ireland will be changed in some form or other, we have not attempted to give instruction in any of these schools.

11182. (By Mr. Latham.) When you speak of the system being changed are you speaking of agricultural education or general education?—The whole system of general education. That raises a very important question, and one, I am sure, which will be of interest to this Committee, that is, where are you going to draw the line between the administrative sphere of departments such as ours, or say between the Board of Agriculture and the Board of Education in Great Britain. Obviously, you cannot have the two bodies at work in the same schools, and yet agricultural education of some kind should be provided; perhaps not technical education—I would be opposed

to giving technical education in the elementary schools—but some form of education that would have a bearing on the agriculture of the country should be given in these National Schools, and whether that should be given by the Board of Education in England, or the Commissioners in Ireland, or by the Board of Agriculture, which is primarily interested in promoting agricultural education, is a question for consideration, and it is, of course, one that is of extreme difficulty. I think I have run over now the main heads of our scheme of agricultural education in Ireland, and if there is any question or questions relating to the other work of the department, I should be very pleased to answer them.

11183. (*By Lord Barnard.*) Have you formed any comparison between the system which you have just described to us and the system—I can hardly call it system; the want of system—in England, and do you consider that in England any such arrangements could be made similar to those which exist in Ireland?—As I have already pointed out, the main difference between the two systems is that in Ireland the Department insist first on the County Councils raising a rate before the Department will give them any of their endowment; in the second place they have retained within their hands the full control of every penny that is spent by the County Committee, and if you were at the beginning of your work in Great Britain, I would certainly say, from my experience in Great Britain and from my experience in Ireland, that the system we have adopted in Ireland is infinitely superior to the one that you have here.

11184. But is it not also very much more costly from an administrative point of view?—I do not think so. You, certainly would require a larger central office and a larger number of clerks, and you would require more inspectors, certainly, but beyond that I do not think it would be more costly; in fact, to my mind, it would be cheaper in the long run. Take, for example, such work as the agricultural experiments. There has been a vast amount of excellent work done in Great Britain in that direction. I myself took part in it and attempted to use the results of other institutions for educational purposes, but it was almost impossible to do so because of the want of co-ordination between the work of the different institutions. In Ireland the very first step I took, having had this experience in Great Britain, was to be careful to avoid any mistake of that kind, so that to-day all our agricultural experiments have been so concentrated that I could give you the results of them in a sixpenny telegram. That is because while we allow our agricultural instructors a certain amount of scope for experiments and investigations of their own, we have our official sets of experiments, which every instructor in the country must carry out, all on the same lines; we are thus able to collate the results in such a way that we can get far more good out of it for our farmers, even with our somewhat backward farmers—backward I mean in the way of not reading the agricultural press to the same extent as the farmers in this country. In Great Britain, of course, there is an Agricultural Education Association. I would hope great things from that body if it were encouraged to meet oftener and to attempt greater co-ordination of the work than has been attempted in the past, but I do not see how you will be able to co-ordinate the work in Great Britain as well as we are able to do it in Ireland.

11185. Do you think it would be a good plan if the Government Department were to assist and encourage that Agricultural Education Association more?—I think so.

11186. It is hardly fair to expect the teachers to do it at their own expense?—No. I think that body ought to be subsidised; if such a body existed in Ireland, we would subsidise it at once.

11187. (*By Mr. Medd.*) Is not the Agricultural Education Association in England purely a body of teachers?—It is.

11188. A body that might possibly be suspected of existing mainly to promote the interests of teachers?—No, I think for advancing research work; I was a member of it at one time myself.

11189. One of its prominent members confessed to me the other day that it did little directly to further agricultural education?—That is perhaps because it wants re-organising; it wants other people appointed on it if that is so.

(*Professor Middleton.*) I am a member of that body, and I must protest against Mr. Medd's insinuations.

11190. (*By Lord Barnard.*) You have drawn a very clear distinction between the system adopted in Ireland and that adopted in this country, but should not I be

justified in saying that the industries of this country differ so enormously from the industries of Ireland that you cannot say that what has been done in Ireland might equally well have been done in England, for the simple reason that agriculture, although, perhaps, most important, is by no means the only great industry in this country as it is, I understand, in Ireland, except, perhaps, up in the North?—Yes, but agriculture is also a great industry here apart from the industrial districts.

11191. You, yourself, lived in an industrial district while in England—in the North Riding?—Yes.

11192. There is the mining industry and the textile industry to be taken into consideration?—Quite so, but that does not affect the fact that you have got large tracts of land in England that are purely agricultural, and quite as agricultural as Ireland.

11193. Quite so, but do you think that these other industries would acquiesce in so large a proportion of public money going to the assistance of agriculture as is the case in Ireland?—Well, I am afraid not, because the industrial industries are so well represented in Parliament that the agricultural industry would come off badly. On the other hand I am one of those who believe that the towns ought to pay the country something for the large number of people the country supplies to the towns annually.

11194. (*By Mr. Norman Lamont.*) With regard to the "whisky money" you mean, I think, that the money which is intercepted from the local taxation account is already given to the County Councils?—Yes.

11195. And that we cannot, of course, take it back?—I believe not. It would be very difficult to alter it.

11196. You, I dare say, know that the Chancellor of the Exchequer has announced publicly that in future this money is to pass through the Exchequer. Do you not think, therefore, that it is possible, while the money already given to the County Councils cannot, of course, be taken back, that in the re-organisation scheme, which will, of course, be brought forward next year, it might be possible to make any increase of that "whisky money" accruing in the future contingent upon a rate being raised?—I was not aware of that fact. Certainly, if the County Councils are going to get any more money, I would strongly recommend that it be given on the same conditions that the Department of Agriculture in Ireland gives its money, namely, on the condition that a Council raises a rate of an equal amount, and formulates a scheme, and submits that scheme to the central authority, and in that way the central authority gets some control over the work and sees that the money is applied in agricultural education and is not diverted to other channels.

11197. With regard to the training of elementary school teachers in Ireland, there is, I believe, in that country, as there is in this country, no differentiation at all in the training of the teachers who desire to take up teaching in rural schools from those who intend to take up their life's work in urban schools?—No; there was at one time; at one time many of the teachers were taught agriculture, and in fact, before the Department came upon the scene at all there was an extensive system of agricultural education in Ireland, but for one reason or another it had all gone down. It was a system of instruction through the National schoolmaster, a system that I certainly would oppose utterly. Any success which we may claim for the work we have done in Ireland has been due to the fact that we will not recognise anybody as a teacher of agricultural education unless that person has really been well trained. That is the first and foremost point if you want to be successful. You must have them well trained. Again and again we have got into serious difficulty with County Committees through refusing to sanction the appointment of certain classes of instructors, but we have stood firm, and nothing but the most rigid examination will satisfy us. Even a man with a degree, without the other qualifications, will not satisfy us. The County Committees advertise these vacancies, and we get large numbers of applications from Great Britain and elsewhere, but even then, no matter what degree he has, the candidate must be subjected to a thorough examination, not only in technical knowledge but in practical knowledge, and it is by that means that we have managed I think to be pretty successful all along the line. If you once give way in the teaching of agriculture or any other subject, and employ half-educated teachers—I mean in our particular line of work—you are bound to have failure.

11198. I absolutely agree, but you would perhaps admit that nature study, for instance, may well be taught by the elementary teachers in the rural schools?—Yes.

Prof. J. R. Campbell.

26 June, 1907

Prof. J. R.
Campbell.

26 June, 1907

11199. And that a grounding in that in the elementary school would be an advantage ?—Decidedly.

11200. And would assist in the future agricultural instruction in higher grades ?—Quite so, I believe in that ; but my difficulty is this, and it is a question that we have often considered in Ireland, that the moment you begin to teach nature knowledge it too often degenerates into a sort of bastard technical education in agriculture and horticulture. It is so exceedingly difficult to get teachers, unless they are very well trained, to teach the subject without reference to technical agriculture and technical horticulture, and it so often degenerates into mere text book work—in fact, as I have already said, into a bastard form of technical education in agriculture and horticulture. But if it is taught properly, then, of course, every one of us will agree that it is an admirable training, and it does not matter, of course, what the boy is going to be—whether he is going to be a farmer or a shoe-maker, it is equally good that he should have that kind of instruction that you mention.

11201. It really depends upon the original training of the teacher ?—Yes, upon the training the teachers get, and I myself believe that one of the reasons why that very extensive system of agricultural education that existed in Ireland many years ago—because agricultural education began as far back as 1826 in Ireland—all came to naught, was mainly because the teachers were not trained.

11202. As to co-operation, we know you have done a great deal in your Irish Department of Agriculture to foster co-operation among the farmers, and particularly among the small farmers. I should like to ask you how that has been carried out, and how its advantages have been brought home to them ?—Of course co-operation in Ireland was started by a voluntary association, the Irish Agricultural Organisation Society, and it has only been in recent years, since the creation of the Department of Agriculture, that that body has got public funds. It is now in receipt of a grant of £3,700 per annum, but I may say the country is by no means unanimous with regard to the continuation of that grant. On the contrary, the question has been debated in our Council of Agriculture, and while there was a majority in favour of making the grant, there was certainly a very large minority against it, and the question will come up again at one of our future meetings, and whether the grant will be continued or not is very doubtful. You see, when you begin to organise societies you get into conflict with the trader, and of course, if the trader has a say, as he has in Ireland, in the administration of the funds, you can understand how there will be objections to the giving of money for organising societies, but of course as to the value of these societies there is no doubt whatever, and as to my view that the grant should be continued there is no doubt whatever. It ought to be continued. The form of organisation which to my mind is most needed in Ireland at the present time, and which we are devoting a good deal of attention to, is the organisation of credit banks ; that is to say, agricultural credit banks. We are making very considerable progress at present in the organisation of these societies, and they will be of immense advantage to these new occupiers who are now being settled on the grazing land.

11203. Those banks are all on the Raiffeisen system ?—Yes, all those banks are on the Raiffeisen system.

11204. (By Professor Middleton.) When your Vice-President was outlining the difficulties with which your Department was confronted in respect of education, he said the chief difficulty in all educational work was that the supply has to precede the demand. You have been seven years at work in Ireland. Have you noticed yet whether there is any distinct change in the attitude of the Irish people towards this question of technical education ?—I have been asked that question several times. People will say "What is the best evidence that there is a demand for your work, and that your work is appreciated." I say the evidence is that all these County Committees are clamouring to get more and more of it, and these County Committees are largely composed of farmers. The County Committee is appointed by the County Council, and it may co-opt others interested in the work, and the County Council usually delegates to that Committee full powers with regard to the rate and so on. My reply to the question is, that instead of there being a falling off in the demand, it is getting keener and keener every year.

11205. What branch of your work, in your opinion, most attracts these County Committees—is it the work of the agricultural instructor ?—The agricultural instructor, of course ; but there is no doubt that our live stock schemes are tremendously popular, horse breeding, cattle breeding,

and all that sort of thing. But it must also be said that there is not a County Committee that has not been ready for the last five years to appoint one or two agricultural instructors, if they could get them. When that pamphlet, from which you quote, was written—you will see there we say we propose two years for itinerant instruction in agriculture—we did not think there would be such a continuous demand for instruction ; we thought it would fall off after a few years, but, on the contrary, the demand has grown, and year by year the interest that is being displayed is increasing. Of course I look forward myself to the time when there is bound to be a greater demand for systematic instruction and less for the popular form of itinerant lectures, and so on.

11206. Your itinerant instructor also gives instruction in about 28 winter schools, I see ?—That is only in a few counties, mainly in the north, but that will spread to hundreds of centres when we get a sufficient number of teachers.

11207. What is the largest number of winter schools that you have in any one county ?—I think three.

11208. What is the largest number of agricultural instructors you have in any county ?—Two.

11209. Has every county got its instructor at present ?—Every county, I think, has ; there are some vacancies at present, because we have withdrawn the instructors for our central work. We recruit our central staff from these men from time to time, and we have taken away some of our best men for central purposes, and in some of these counties the posts are now vacant, but there is not a county that will not appoint a man at once if they can get him.

11210. How do you select your instructor ?—We select him first for his practical knowledge in agriculture, and then we give him three years' training at the Royal College, and the moment he gets his Associateship of the Royal College he is eligible to become an instructor.

11211. Do you take every one who has got the Associateship ?—Every one.

11212. There is no subsequent examination as to his power to teach, or anything of that sort ?—No. That of course is gauged as far as possible at the time he is selected.

11213. When a man comes forward who has not been trained by you, you subject him to an examination as to his power to teach ?—We do, and we have to, because you might not send us your best from England. The counties often advertise in the British press, and 20 or 30 people may apply. Some of them may be very good on paper, but we would not accept them for the particular class of work that they have to do in Ireland, so we hold an examination, and select three or four of the best. We then send their names down to the County Committee, and say : "You can select either of these, but you may not appoint any others."

11214. You made a reference in your evidence to the want of co-ordination in the experiments that were being carried on in Great Britain ?—Yes.

11215. You referred, of course, to your own experience, and that was prior to 1900 ?—Yes, prior to 1900.

11216. You know that, chiefly through the action of the Agricultural Education Association, a number of joint schemes were formulated and published ?—Yes.

11217. I think these schemes are pretty largely adopted now throughout the agricultural colleges ?—Yes.

11218. They are of course voluntary ; there is no power to compel them to be carried out ?—Quite so. We, on the other hand, have power to compel, and every one of our instructors must be in our association. I have some copies of our various schemes here, which I should like to hand in, if I may. (*Handing documents.*)

11219. As a matter of fact, these schemes are similar to the schemes of the Agricultural Education Association ?—They are of the same type.

11220. The only difference is you have power to enforce, and we in this country have no power to enforce ?—That is so. We pay all the expenses of our instructors to the conferences—you do not do that ?

11221. No, we do not.—Everything is left by you to the individual, and I think a society ought to be subsidised if it is going to carry on a good work.

11222. As you know, the members of this association live in all parts of the country ?—Yes.

11223. You have alluded to the difficulty in getting large attendances at committee meetings in this country, because men have to come at their own expense ?—Yes.

Prof. J. R.
Campbell.

26 June, 1907

11224. In Ireland you always pay their expenses?—Always, and we make their attendance compulsory.

11225. You have been yourself a teacher of agriculture?—Yes.

11226. You have studied in Scotland and also in Germany and I should like to ask you, from your observation of what is being done in England, Scotland, Ireland and Germany, if you could indicate to us any marked differences between our English system and the German system. What I am anxious to get at is this: how does the amount of work which is being done by the agricultural expert in England compare with the volume of work that is being done in Germany as you saw it when you were a student there?—Of course I was not prepared to go into those matters, but I may say that in Germany generally they devote far, far more attention to the scientific aspect of the question. In this country we are intensely practical. We are devoting more attention to the practical side. If you take the purely scientific side we do infinitely less, although if you take the practical side we are doing quite as much.

11227. That is to say, you in Ireland?—Well, in this country too; I am talking of the practical work. I am talking of the farmer's platform rather than of the platform of the scientist. Of that I am quite sure. Compare the work in the schools in England and France and their instructors. I think we are far ahead of them, but not in scientific researches; in their researches bearing on the subject they are far ahead of us.

11228. You mean rather that in what we may perhaps call our practical experiments and demonstration work for farmers, work which the farmer takes a lot of interest in, we are quite equal to them?—I think we are.

11229. In providing for the education of the small farmer, which is a practical development of the subject, how do we compare with what you saw in Germany?—Do you mean the farmer's son?

11230. The farmer's son?—Compared to the size of the country I think there are plenty of equally good facilities in this country to what you find now in many of the continental countries.

11231. That is as far as colleges are concerned?—That is as far as colleges are concerned.

11232. But when you come down, we have nothing to compare with the middle agricultural schools?—No, you have nothing in this country to compare, for example, to our agricultural stations. They fill a want in Ireland: you do not have them here, and you do not have the farm apprentice schools, but of course you do have here, as they have abroad, short winter courses.

11233. Of course abroad they are very much more developed?—That is so.

11234. (By Mr. Davies.) I think the Committee were very interested in your description of the agricultural stations. Could you tell the Committee whether those were run at a loss or otherwise?—Two of the stations comprise about 700 acres, the other is about 350; they are run as part of the live stock schemes. At these stations we keep horses, bulls and boars and so on, and of course it depends upon what you charge for them whether you run the place at a loss or not. The only one of these colleges that is run as a business concern is the Albert College. That pays its way; but on the other places there would be a considerable loss, of course, due to the fact that it is not run really for farming purposes. For example, at some of the stations you would find that a great number of rams are bought and kept for a year in order to become acclimatised to be sent to the farmers in due course. Then again you may find 50 or 60 shorthorn bulls waiting for the farmers to select from. In that way it cannot be said to be run at a profit. As I have said in one case, namely, the case of the Albert College, it does pay.

11235. Do the fees of the students cover the cost?—No—I thought you were referring to the farm.

11236. It is the fact, is it not, that the students when they leave these stations must take up farms in Ireland—why is that condition imposed?—Because the fee does not cover the cost of the education—because the boy may cost us £25 or £30 to educate, and we would not be justified in spending the public funds on a young fellow who is going to emigrate. We only spend money on the lads that we know are going to stay in the country, and help, in that way, to make an impression by their example, and in other ways, on the country in time.

11237. Is that a condition imposed by your Board or

by the County Council?—By our Board; the County Council have nothing to do with that.

11238. The fees are proportionate to the amount of the valuation of the parent's holding?—Yes.

11239. Does the fact that you do charge this minimum fee of £3 prevent the very small farmers from sending their boys?—There are some very small farmers in Ireland, and I have no doubt that even the £3 would be a bar to some of those very small farmers to sending their sons, but on the other hand there is an enormous number of medium-sized farmers, 20, 30, and 40 acres, and £3 is not a bar in that case.

11240. What provision do you make for carrying out research work?—Scientific research work we carry on in the Royal College of Science: practical questions are dealt with outside. Suppose there is a cattle disease requiring investigation, we would, perhaps, set up a hospital and give a grant of £200 or £300 as the case may be, and employ a veterinary surgeon to make an investigation into it. Experiments with cattle feeding we carry out at the agricultural stations. We have not made very great progress with the higher form of agricultural research, and you will at once see the reason why, and that is because we have only been at work since 1900, and it took us three years before we got men trained; two years were spent in itinerant instruction, and there has not been sufficient time yet for that man to have found his feet, so to speak. But we do carry on research by the professors in the college, and we frequently employ specialists outside the college staff. For instance, we had a disease among calves not very long ago, and we employed a veterinary surgeon from France, and fitted up a laboratory for him to investigate the matter. We have done the same with regard to other diseases.

11241. Do the farmers value your work; do they realise the indirect benefits which accrue from the instruction you give them, or is it simply because they do get almost a direct pecuniary benefit from your stock schemes and the other subsidiary work that you carry on?—Of course the stock schemes are distinct from the educational schemes but the fact that you have the same body administering them, and that that body of men have the confidence of the farmer in a way that county councillors have not got here is a great point that we have in our favour in Ireland. Then again there is the tendency of the farmer to follow a leader, and if you get a few leading men on these county committees the smaller farmers look upon it as an obvious part of their duty to follow them. Of course we have men who are indifferent, and so on, but the tendency of the small farmer to follow the leading men of the district is far more powerful than it is in this country, so that we do get a good deal of interest taken in these schemes.

11242. (By Mr. Latham.) You said at the commencement it was very difficult for you to divide your teaching, in consequence of the amount of money that was allocated to what I might almost call domestic purposes. Cannot you give us some idea of the amount of money that is allocated for these animals?—I could give you the exact amounts; I have them here before me. I prepare a budget each year for the expenditure in the twelve months. We get our grants made from the Agricultural Board in the middle of next month, and this is a budget I am preparing for them. I can give you from this document the exact amount which was set aside by the County Councils last year for the various schemes. You will remember that I said the Department spent £100,000—£50,000 for the county schemes and £50,000 for the central schemes; and I also mentioned that the County Councils raised a rate amounting last year to £32,000.

11243. Over the whole of Ireland?—Yes, every county, without exception. I can give you here the exact sums that have been set aside for the different schemes by the county. I could give you them county by county, but the total for Ireland will suffice, perhaps.

11244. Yes, the total for Ireland will answer my purpose. Will you give us as near as you can the amount that is allocated to horses?—I will give you every item; I have them all here. The total amount for itinerant instruction in agriculture is £11,366; these agricultural classes that I spoke of, £3,043; poultry keeping, £9,129—that includes instruction on these 500 farms from which the sittings of eggs are distributed; butter making, £3,280; horticulture and bee keeping, £5,147; cottage and farm prizes, that is for small farms and cottages, £5,782.

11245. Those are for cultivations, I suppose?—Yes. Then live stock £23,867.

11246. Would it be difficult to divide the live stock into

Prof. J. R.
Campbell.

26 June, 1907

the four different classes?—It would not be difficult, but I am afraid I have not got it here. I have mentioned the total sum that was ear-marked last year for that—£23,867. That is the sum of money which is to be given in premiums and other forms to the different classes of live stock, and to which the County Committee contribute out of the rate, and to which the Department contribute out of their funds; but the whole may not be required, and if any part is not taken up the Department retains its portion and the county retains its portion.

11247. That does not include the cost of the animals?—No, that is merely spent in improving them.

11248. Can you give that separately?—Yes, I can give you the amount actually spent in 1906—that is the amount actually ear-marked and promised. The amount actually spent in nominations to mares was £8,838.

11249. Do you take the male and female distinct there?—£8,838 was given in nominations to mares in this way; the Department hold every spring about 200 mare shows; the mares are brought in by the farmers, young mares generally, and the Department's inspectors examine the mares for suitability and soundness, and hand out free nomination tickets to the owners of selected animals.

11250. Certificates, may we call them?—No, simply a docket entitling the holder of that docket to have that mare served by one of the stallions which the Department have approved and "vetted."

11251. May we take it that all unsound animals are rejected?—Yes, every one. That causes a tremendous amount of ill-feeling all over the country, but all unsound animals are rejected.

11252. And a very great deal of good feeling, too. You take the females on one side and the males on the other?—We take the females in the case of the horses, but we also "vet" the stallions as well.

11253. You hold an examination of the mares and you give a bonus to them, and then you give a bonus also to the bulls?—That is right.

11254. Not to the cows?—No. In 1906 the premiums to bulls were £13,635. These are given in premiums of about £15 per bull. The owner of the bull must allow him to serve a stated number of cows at a shilling apiece, the price being fixed to compete with what is known as the scrub bulls of the county. At the end of the season there is a certificate given that the services have been effected and the owner of the bull gets the premium of £15. That was for the year 1906, but as I have pointed out the total amount ear-marked for the year 1906-7 is £23,867.

11255. What may be the return that you get from the fees?—The farmer gets the fees; we get nothing.

11256. That goes to the owner of the animal?—That all goes to the owner of the animal.

11257. Have you any price that you put on the sires—the horses?—What we do with the horses is this: we advertise all over Ireland that on a certain date the Department's veterinary inspectors will come round, and all animals that are wanted to be put upon the register, as we call it, all sound and suitable animals, must be submitted to the veterinary surgeon. If the veterinary surgeon passes the animal, if he says he is a high-class animal, the animal is put upon the register. That accounts for the animals in the country, but you will find when a map is prepared that there are large areas where there are no good sires. We send an inspector to Great Britain, and if a sire is found sound and suitable he is bought and sent over to Ireland and kept at our stud farm, and to induce farmers to buy good animals and import them into their districts the Department gives loans and grants, subsidies varying from £50 to £100, so that if a farmer wished to purchase a high class sire for, say, £200, he pays so much and he is able to obtain a loan amounting to two-thirds of the purchase price, which is repaid in annual instalments extending over five years with 2½ per cent. interest on the outstanding balance, the animal, of course, remaining the property of the Department for five years.

11258. Is he tied down to serve mares with that stallion at a fixed price?—Yes, by the Department.

11259. About what would that price be?—Two guineas is the usual price. Of course the services of these horses is pretty expensive in Ireland.

11260. I quite agree. Does the first cost of the stallion fall upon the farmer, or does the Department pay for the horse subject to the part of the purchase money that is found by the farmer?—The Department buys the horse outright first of all and then sells him on a loan system to the farmer.

11261. What do you do with regard to sheep?—With regard to sheep, that is the one live stock scheme that has not been a success because of the Sheep Scab Regulations, and of course, as you know, sheep are different from horses and mares and cows: you cannot bring them to the ram in the same way. We have accordingly abandoned the improvement of sheep, except in the form of giving prizes at the shows for them, and except in the western districts, where the sheep run in common. What we do there is, we buy large drafts of good lamb rams and keep them at one of the agricultural stations until the following year and let them out to the farmers as shearlings. We do not pamper them in any way; we sell them at a reduced price. We will probably sell him a £5 or £6 ram for £2; he does not know he is getting that advantage, he thinks he is paying full price, but as a matter of fact that is what we do.

11262. Instead of selling the flesh you think it more important to sell the blood?—We sell the blood, that is so.

11263. Now with regard to pigs, what do you do?—With regard to pigs this is what we do. Every farmer who has pigs of the right type for the bacon curers, because bacon curing is a very important industry in Ireland, enters on the Department's books that he has so many boars, and when the time comes the inspector goes to his farm and selects the boars and earmarks them, and anyone applying to the Department for a boar is informed where to go. The purchaser of a selected boar gets a premium of £2 to £5 at the end of the season.

11264. The farmer keeps the boars?—The farmer keeps the boars.

11265. What about the milk industry?—The chief expenditure in the milk industry is in improving the creameries. Of course, we have home butter making as well, but our great milk business is done through the creameries. We keep a staff of about eight instructors going round these creameries looking after the machinery and so on. We make plans and prepare specifications for them and report on sites, water supplies, and all that kind of thing, and we hold surprise butter competitions eight or nine times a year. Any evening I may give instructions for a telegram to be sent out at 8 o'clock the next morning to every one of these creameries, and the same day the creamery has to send up a cask or a box of butter to the Department and we get judges over from Great Britain to judge that butter and give prizes for the best. That is what we call a surprise butter competition. They do not know when their butter is going to be judged until they get the telegram to send it up.

11266. Having told us very nearly what you allocate to these several departments, would it be difficult to say what you have left now for agricultural education?—I have not finished yet. I was on live stock. Then we give subsidies to agricultural shows; we encourage the holding of small agricultural shows. On that there is spent £7,251 per annum. Then for the cultivation of flax there is about £800 spent. Those practically are the chief items on which we spend money through County Committees. The total that was spent in the year 1906 was £48,055. You will remember I said a little while ago that of the £100,000, we spent £50,000, but it was actually £48,055; the other £50,000 we administered directly from the central offices. All these things that I have been reading off to you are mixed up, partly agricultural instruction and partly a subsidy to the industry, so that it is extremely difficult to say exactly how much of it goes to agricultural education. Of course I could work it out for you and get at an approximate figure, if you wish it.

11267. Will you tell us what the county rates are to assist that?—Every county raises a rate; they must; it is a condition precedent to their getting anything at all that they should raise a rate. The total rate raised in 1906 was £39,583, and of that, as I have already showed you, £32,000 went to agricultural purposes, the balance going to technical instruction.

11268. What about would that be in the pound?—With the exception of four or five counties that raise one halfpenny in the pound, it is about one penny in the pound. There are 33 counties and one penny in the pound raises a little over £39,000.

11269. What about the amount you give towards your purely educational establishments?—In the budget which I have made out for this year it is a total of £18,580.

11270. Amongst how many institutions?—The Albert College, Munster Institute for women, Athenry Station,

Prof. J. R.
Campbell.
—
26 June, 1907
—

Ballyhaise Station, Clonakilty Station, Ulster Dairy School—that is the new Ulster Dairy School for women which I told you has just been started—the Monaghan School, and the Mount Bellew. That is eight institutions and the amount is £18,580. That is my estimate for the year: I am asking that sum of money to run them for the year.

11271. With regard to your teachers, they all have to pass the same examination, I take it for granted?—Yes.

11272. The teaching throughout Ireland is all on one basis?—Yes.

11273. That basis is laid down by your Department?—Yes.

11274. Who is your examiner?—Our chief inspector, Mr. Gordon, is the chief examiner, assisted by the Professor of Agriculture in the Royal College of Science, on whose report the appointment is always made.

11275. Are these examinations anything like our examination for the National Diploma?—Yes, except that our men have had a much longer training; our session lasts for nine months, and from beginning to end they have got practical work in the laboratories; that is more than is given in the university colleges in Great Britain. I do not say it is a higher standard, but we teach a little differently. The first year no distinction is made between those that are to be chemists or engineers or agriculturists; they get a very prolonged training in the fundamental sciences. Then in the second year the same thing is done; it is only in the third year, in their final course, that they get their agricultural instruction. To my mind that is a specially good system, and I think that we get more out of it than we should if we followed the plan that is adopted in all the institutions in Great Britain.

11276. (*By Professor Middleton.*) That course is a similar one to the course adopted at a good many of our institutions?—Yes, but your courses are not so prolonged. The amount of chemistry teaching you give in the University College here is very small compared with what we give. The student must sign the book at nine o'clock in the morning, and he must not leave the laboratory until four o'clock in the evening, and that goes on for nine months. It is a very substantial course.

11277. It is not more than at Aberystwyth, is it?—Yes, much more. They do not spend the whole day in the laboratories there.

11278. For the degree, yes?—At any rate, in any of the Universities that I am acquainted with, either at Glasgow or Edinburgh or at Leeds, our course is much more substantial.

11279. (*By Mr. Latham.*) When do these students get their practical education?—Before they come. When they first come to the College they have to undergo a practical examination. If they cannot pass it they are not admitted. They have to prove that they can perform all the ordinary farm operations.

11280. Do they go through an examination in practical work before they are admitted?—Yes, and we will not admit them unless they can pass that.

11281. Is there any educational standard necessary before they are admitted?—Yes, they have to pass an entrance examination consisting of English, then they have Latin, French, German, or Irish as another subject, then mathematics and the practical test in agriculture.

11282. Will you just read the practical tests out?—“Each applicant must have practical experience of one of the following: Agriculture, horticulture, forestry. Each applicant must have had substantial experience of practical work in connection with farming, gardening, or the management of woodlands. No technical knowledge will be expected. The examination may be written, oral, and practical. The subjects will include all the ordinary work of farms, gardens or woods, as practised in Ireland. On no account will a scholarship be awarded to a candidate who fails to attain a high standard in the subject he selects for this portion of the examination; while excellence in that subject will be taken into consideration in case of deficiency in one or more of the others.” That is the practical work. If he selects farming he must attain a high standard in that subject. We advise our inspector that no student is to be admitted unless he can demonstrate that he is capable of performing all the work of a farm, and over and above that, he is tested as to his general knowledge.

11283. That is to say, you leave to the practical examiner full discretion as to his ability?—Yes, full discretion.

11284. With regard to the first-class arrangements you make as to these animals, have the animals in Ireland improved?—There is no doubt whatever about the cattle having improved; we have tested that; every salesman in Great Britain and every breeder will tell you that they have improved very much; there is no doubt about the cattle, they are improving rapidly. It is a little difficult with regard to the horses, because the Boer war depleted us of the mares and, in fact, of good horses altogether for a long time, and I cannot say that the exportation of horses since is a sufficient guide to indicate the improvement. I have more doubt about the horses.

11285. To go back a little before the Boer War, your programme was in force, was not it?—No, it was just beginning then, you see.

11286. May I ask you to go back and tell us when the distribution of these animals began?—The distribution of these animals began in a small way, I am not quite sure how many years before the Department was created in 1900. The Royal Dublin Society had a sum of £5,000, just as you have £5,000 in this country, and they administered it for the improvement of live stock.

11287. Your country has been very celebrated for horses, at any rate all my life time?—Yes.

11288. How did they manage before the distribution of these sires began?—I think myself, although the Irishmen would not like me to say it, that a deal of their success is due to their soil and not to their management; that is to say, they have always had good horses in Ireland, and they always will. You can grow them right there.

11289. I rather want to make a comparison?—I could not go further back than that. Of course, in the earlier days some of the landlords took an interest in the subject, but now, of course, the Department of Agriculture is the philanthropic landlord, and they take the lead in the improvement of stock.

11290. May we take it that there has always been some department to assist in this respect?—No, I do not think so. There used to be, and there are still, a number of good horses bred in Ireland for racing purposes, and many of the landlords used to keep a good thoroughbred horse.

11291. You are not able to draw a comparison?—No, I could not draw a comparison. I could with regard to cattle; there is abundant evidence of that.

11292. Sheep you cannot say much about?—No.

11293. Pigs you can?—Yes, pigs have improved immensely.

11294. Have they improved in sort?—They have immensely, especially in the west of Ireland.

11295. Do you consider the position of the Irish farmer has much improved?—Those who have bought out their land, yes.

11296. Are your farmers principally men that have been farmers from father to son downwards?—Yes.

11297. You have not any great number of men who have been town men and have gone on to the land?—No—we do not want them—not at all.

11298. I did not quite catch your remarks to the Chairman when you were talking about the education from the elementary schools upwards. How is that managed?—There is no agricultural education at all in the elementary schools now. There was previous to the time when the Department was established. There had been, as I said, agricultural education in Ireland since the year 1826, and, in fact, Ireland was a long way ahead of Great Britain in that respect for some time, but for some reason or another it has gradually gone down, until when the Department took it over in 1900, all that remained was the Munster Institute, the Albert College at Glasnevin, and the Royal College of Science.

11299. The junior boys, when they first go to school, are not taken up by the Agricultural Department?—No.

11300. They are taken up by the Education Department?—Quite right.

11301. They are taken through the elementary schools in the hands of the Education Department?—Yes.

11302. Is that sufficient education to bring them high enough for your agricultural schools?—No, we do not think so.

11303. What happens then?—What happens is this, that we often get into our schools boys to whom we have to give an elementary education. In these agricultural stations we have to have a master to teach them English

Prof. J. R.
Campbell.
26 June, 1907

and arithmetic and all that sort of thing, which should not be necessary; the boy should come to us able to enter at once upon his programme of agricultural education, but we have not got that yet.

11304. Are there any secondary schools?—Yes, there are.

11305. Do they not go from the elementary to the secondary schools?—They do.

11306. Who pays for them?—There are grants given by the Intermediate Board.

11307. That is not exactly what I want to know. Are they paid by your Department or by the Education Department?—By another Education Department altogether.

11308. Virtually the elementary schools and the secondary schools are all prior to your agricultural education?—That is so.

11309. If these lads come to you in a backward state, you have got some sort of institution in which you can coach them prior to the time that you can take them in hand?—The intermediate schools do not come under the Department.

11310. I perfectly understand that, but when the boy goes into the elementary school and the secondary school he is on one side of the furrow?—Yes.

11311. Directly he comes to you he is on the other side?—That is so.

11312. If they are backward when they come to you and require an English teacher, on what line are they educated? Is it at another secondary school, or is it in your department?—In our department—that is part of the instruction they get at our school, but they could get that at the evening schools if they went to them.

11313. Is an educational test necessary before they can be taken on by the Agricultural Department?—We submit them to a test in English and arithmetic before they can come to the agricultural schools. That test, however, is not a very difficult one because we are anxious really to get at the boy who is going to be a farmer, and very often that boy has got the worst education at the elementary school. Therefore we would take him in with a very low standard of examination, and we improve his education if we know he is going to be a farmer, rather than pass him by and take a good boy in his place who is not going to be a farmer.

11314. That boy you would take rather more trouble with than with any other?—Yes, we spend all our time on that boy. We keep out all the others as far as possible.

11315. Do you find that they do stop on the land when they leave you?—This has only been in force now for two years, but we have a guarantee from the boy's parents, or his guardian, that they have got a farm, and they have to name the farm, and the itinerant instructor must certify that that is so, and also the parish priest that the boy intends to be a farmer, and to the best of our knowledge all the young lads we have are going, eventually, to farm in Ireland.

11316. What do you do for the Irish agricultural labourer?—The only thing we do for the labourer is in the form of itinerant instruction in horticulture, fruit growing and vegetable growing. We give prizes for his cottages, and we encourage him to cultivate his garden well and keep his cottage garden neatly, and, of course, the Department through another branch altogether teaches girls domestic economy, household work, and so on; that is in the main what is done for the labourer.

11317. You do nothing in the way of teaching them to be more proficient in their work like we do in some of our districts in England?—No. We subsidise ploughing matches, and we subsidise hedging; we give prizes for that sort of thing, but it does not amount to a great deal. I could not say it is a great scheme of work that is having a big influence in the country.

11318. I suppose you look upon it that the agricultural man, the farmer, ought to be sufficiently advanced to teach his men himself?—Yes. You see our farms are very small. We have more than half a million farms in Ireland, and a good many of those are under 20 acres, so that the farmer is practically his own labourer.

11319. Do you give any encouragement in milking?—Not to any great extent. I could not say that is a feature, or that it would be worth my while dwelling upon it before you.

11320. May I take it that the principal part of your bulls are now bred in your country?—They are now, but that was not so in previous years.

11321. Where did they come from?—From Great Britain—from Perth and Birmingham, and other places. I have certainly seen one-third of all the bulls at a Perth sale bought by Irishmen and brought to Ireland, but now the breeders of pure bred stock are increasing enormously in Ireland; you would scarcely believe me if I told you the numbers of people who recently have taken up breeding pure bred cattle.

11322. With regard to the horse sires, does that apply?—There is a very large number of them still bred in Ireland, but we import a great many.

11323. Is that principally from England?—Principally from England.

11324. (By Mr. Medd.) You have spoken several times of the developed state of agricultural education in Ireland as long ago as 1826?—There was a system in operation then.

11325. That system was capable of considerable development, especially in regard to the employment of itinerant instructors, I think?—Yes.

11326. In answer to Mr. Lamont, I think you attributed the decay of that system to the deficient supply of properly qualified teachers, did you not?—That was one of the reasons.

11327. The real reason is a political reason?—There was a political reason.

11328. You attribute it to the refusal of the Government of the day to allow grants to be applied in Dublin to the support of the industry?—Yes, that was the Financial Reform Association.

11329. That was a cause of the decay of what, under other conditions, might have been one of the most advanced systems of agricultural education in Europe at that time?—At that time, yes.

11330. So that whatever defects there might be to-day are not due to any indisposition on the part of the Irish themselves to have provided agricultural education for themselves?—Quite so.

11331. They were stopped by the English, politically?—They were hindered—not altogether stopped.

11332. For economic or political reasons?—Yes, the Financial Reform Association objected to it.

11333. I believe your present system dates from the report of the Recess Committee?—It does.

11334. You were not in Ireland at the time the Committee sat?—I was not.

11335. You are aware that no effort or expense was spared to ensure that the whole question of agricultural education should be thoroughly considered by that Committee?—That is so.

11336. The industry of agriculture was considered of such intense importance to Ireland, that, as I say, everything was done to secure an effective and effectual report?—I think that is so.

11337. You are aware, probably, that no report on any branch of agricultural education in England has been issued for the last 20 years—the last report was the report on dairy schools under Sir Richard Paget?—Perhaps that is so.

11338. You may take it from me that that is so?—Yes.

11339. That brings me to this point, that if such an organised system as yours is to be built up in this country, the same care both in regard to effort and money must be expended in order to ensure similar results?—You mean to get a good system?

11340. Yes, you must study the whole situation from every point of view, and you must spare neither time nor money, to ensure satisfactory results?—Quite so.

11341. Any attempt on the part of the British Government to-day to curtail an inquiry would defeat the very object for which such a Committee as this was appointed?—I agree with that. There ought to be a full inquiry and report, certainly.

11342. Your most valuable Recess Committee's report was due to the steps which I suggest should be taken equally in England; that is to say, an inquiry over every branch of the question, and the submission of every type of evidence, and so forth?—Yes, I should say so.

11343. Associated with your Department are various councils and committees, are there not?—Yes.

11344. Can you briefly describe to me the constitution of each of those committees and councils?—There is first of all a Council of Agriculture, two-thirds nominated by the County Councils, and one-third nominated by the Depart-

*Prof. J. R.
Campbell.*

26 June, 1907

ment. That Council is merely a body which meets twice a year and criticises the work of the Department; it has no powers of administration.

11345. No administrative or executive power?—No administrative power, but, of course, it has this power, that I have to answer to that Council for everything I do. They have not the power to censure me or to dispense with my services, or to withhold the money for the schemes, but at the same time I have to meet them and answer for good administration—that is the Council.

11346. It serves at the same time, I suppose, the purposes of a Consultative Committee?—It does. Then it selects from its numbers eight men, and these, together with four nominated by the Department, constitute the Agricultural Board. The Agricultural Board are the custodians of that £100,000 of which I have been speaking. Theoretically, that Board originates no schemes; the Department originates the schemes, brings them before them annually, and the Board votes the necessary funds.

11347. Has it any power of revision with regard to the schemes?—Yes, it certainly has.

11348. It has power to revise, but it does not originate them?—It does not originate them, and, theoretically, it does not improve them; it can simply say, "If you do not do so-and-so we will not vote the funds." In practice, of course, that never happens because we know the minds of these gentlemen.

11349. You have in addition a larger Board, have you not?—No, those are the two Boards—the Council and the Agricultural Board. Of course, I am talking now for agricultural purposes. There is also a Technical Instruction Board—that is a larger Board. We have the Council of Agriculture, which meets twice a year, and the Agricultural Board, which meets perhaps, once every two months, or as often as may be required.

11350. Do the schemes which are submitted to the various County Councils originate from the Council or from the Agricultural Board?—From the Department, not from the Board.

11351. These, I understand, are submitted to the Board before the money to carry them out is voted?—Quite so.

11352. In drafting schemes, do you submit a variety of schemes to each local authority?—No, what we do is this: In the month of June we ask the County Committees for their views as to the working of the schemes for the past year. These views when received are then taken into consideration by the Department, and a fresh scheme is drawn up for the coming year. That scheme is made as elastic as possible. It is a skeleton scheme, so to speak. For example, to take the case of subsidising bulls, we leave it to the County Committee to subsidise whom they please; they may give six to one rural district and two to another, and so on, as they think fit. They may put a valuation upon the farmer as to which is to have the privilege of sending his cows or his mares, but the one thing that we do settle is that the scheme shall be on the lines of a premium or a nomination scheme. That scheme is brought before the Agricultural Board in outline, and they vote the funds. The scheme is then sent to the County Committees. The inspector from the Department attends, and with his help the County Committee allocates its joint fund, the joint fund being made up of the portion from its own rates and the portion which the Department has promised in addition. They allocate that amongst the various schemes in August, and by September the whole scheme is in full working for the year.

11353. The local authority, I take it, discuss generally the requirements for the particular year and submit a draft outline scheme, which you approve or confirm, and finally return to them?—That is so.

11354. Does your contribution bear any relation to the amount levied locally by rate?—Up to the present our system has been this: It may be a scheme of agricultural instruction, or poultry keeping, or of live stock, as the case may be, and the money is voted by the County Committee; they say, "We propose to spend this year £2,000," shall we say, "on cattle." "Very well then," the Department say, if they approve of the details of the scheme, "we will pay five-ninths of the total cost"—that is, 25 shillings from the Department for every pound raised by rates; and to the poorer counties we say we will give three-fifths—that is, 30 shillings from the Department for every pound contributed from the rates.

11355. Of course that is extremely liberal?—Then at the end of the year the County Committees send up to the Department the accounts, and after they have been

examined by the accountants we send a cheque for five-ninths or three-fifths, or whatever the sum may be.

11356. What to-day is the total cost of the subsidies towards agricultural education and of administration?—That, as I said, is very hard to answer, because it is so mixed up.

11357. You will perhaps be good enough to send us the exact amount of administration, including this work in Dublin, inspection, such examinations as you conduct, grants made locally, and local contributions?—The cost of our central office is not on the endowment at all; it is a Treasury vote, and it comes up in the Civil Service Estimates each year. My salary, and the salaries of all the clerks, are not paid out of the endowment at all.

11358. May I take it that the conditions vary so widely that any comparison between the total expenditure in Ireland and England would be unsatisfactory and unreliable?—It would; the system is so totally different.

11359. What now is the exact relation of your Department towards the Agricultural Organisation Society?—At the present time the Department give them the sum of £3,700.

11360. I have the amounts; of course you are a great deal more familiar than I am with the struggle, and the meetings and Sir Horace Plunkett's address, and so forth, and the fact that he obtained a slight majority, and the struggle that is still going on. There is of course a slight difference between subsidising and co-ordinating the work of organisation and propagation for propaganda purposes, and subsidising a particular society in its trade relations. You remember Lord Carrington's letter?—I do.

11361. Does your Department to-day subsidise any co-operative society with respect to its trade relationships?—None at all.

11362. For instance, in respect to the improvement of creameries you spend the large amount of £6,000?—Yes.

11363. How would you differentiate strictly between money applied to propaganda and organisation purposes, and money expended in furthering the sale of produce?—Take the creameries; that money is entirely devoted to technical instruction in our sense of the term.

11364. None of that money goes into the exchequer of the creamery as a creamery?—Not at all. The only way it may be said to do so is in this way, that our instructors save the creamery considerable sums in the preparation of plans and reports on water supplies and sewage schemes. It does assist in that way, but not a penny of that goes into the finance of the business.

11365. At present the practice of the Department to subsidise the work of organisation is continued?—Yes.

11366. Although there is a difference of opinion, the weight of opinion is in favour of Sir Horace Plunkett's policy?—The difference of opinion was in the Council, and the Council has no power to compel the Board to withhold the money, except in so far as it represents public opinion; but the Agricultural Board, acting upon that vote of the Council, voted this year £3,700 to spend on the Organisation Society's propaganda work on condition that myself and one of the inspectors attends on the Executive Committee and supervises the expenditure. That is the only restriction, but none of that money goes in any way whatever into the businesses concerned. It is all spent upon organising.

11367. Of course it is a matter of opinion, but Lord Carrington's letter might be taken to imply a readiness to subsidise the trade industries of the societies?—No doubt, but we never do that.

11368. You are careful to draw a great distinction between the various types and grades of institution in your agricultural education?—Yes.

11369. You have spoken of those which answer to the Royal College of Science type?—Yes.

11370. And those which answer to the type of the school at Glasnevin?—Yes.

11371. With regard to Glasnevin, do you do anything there to-day for the training of teachers?—No.

11372. Not at all?—No, except that we train horticultural teachers.

11373. You used to train others there?—That was in the old days; now all that is transferred to the Royal College of Science.

11374. The intermediate agricultural station serves the purposes of what may be technically termed an

Prof. J. R.
Campbell.

26 June, 1907

intermediate agricultural school, something in the nature of the *école pratique d'agriculture*?—Yes, it is pretty much based on the French type.

11375. That I gather both from the Recess Committee's report and from one's own observation?—Yes.

11376. Do you find that grade of education is appreciated by the farming classes, and turns out good pupils?—It has only been in operation for two years, and I cannot say that it is appreciated as much as one would expect, but that is largely due to the heavy restriction that is put upon admission. I have spoken of the searching test, as to what is to become of that young man when he leaves us, and you can see that if that test were removed we would have these colleges filled to overflowing, but by applying that very vigorous test before admission it cuts off a very large number of candidates.

11377. I should think, if I may say so with deference to what you have already said, the question of fees is a difficulty. You have no scholarships which cover the cost of fee and maintenance?—No.

11378. What should you estimate the cost for maintenance of a boarder to be?—To feed him it costs 7s. a week—1s. a day; that is about £18 for his food—I reckon about £26, but I am giving you a rough estimate. I have not worked it out in great detail, because I have not those figures before me.

11379. In introducing a new grade of school you are imposing a rather heavy burden on a heavily taxed and impoverished class of people—the smaller Irish farmer is not very well off?—No.

11380. And to give up the services of his son from the age of 16 or 17 means a considerable sacrifice to him?—It does.

11381. Do you not think you could either through your local authorities or the Department, offer at least a few scholarships, say one in each county, possibly to include board and maintenance?—No, I do not think so. Suppose you did. Suppose you take the agricultural station at Ballyhaise; it is capable of holding say 50, and if we offered 25 free places in the way of scholarships, what would the result be? The result would be that you would have 25 pupils, and the other 25 would say, "Why should we pay? We will wait till next year and get a scholarship."

11382. You are perfectly right if you can popularise the school by showing its definite practical advantage to agriculture and to the farmer. That is the best method to proceed upon undoubtedly?—Yes; I admit it is not so easy to fill our schools as it would be if we adopted your plan, but we are working to a surer and more definite result in the end.

11383. Yes, I think you are wiser if you can do it without adopting the other plan. With regard to the winter schools, that is a type that we particularly want. Could you kindly describe in detail the organisation and work of such a school as Downpatrick, or you probably have a scheme illustrating the curriculum that you could send us?—Yes.

11384. The cost of maintenance, the terms under which pupils are allowed to go and to be housed free?—They are not housed; they are conveyed free. They either come in on bicycles or on the railway, or in some cases we provide a horse conveyance for them and bring them in.

11385. I think that course is about 22 to 26 weeks?—About 20 weeks.

11386. Could you kindly send us for insertion in your evidence the organisation, the curriculum, the results and the methods of dealing with the pupils, and the cost?—I will.

Thank you very much. [*The Witness subsequently forwarded to the Secretary prospectuses of the agricultural schools and stations in Ireland.*]

11387. With regard to the elementary schools, you have entirely dispensed with the farm schools?—Yes, because that is under the Commissioners of general education.

11388. Do they still keep any farm schools on?—No, there is nothing at all left of them.

11389. With regard to the elementary school, you do not desire anything of a technical character to be taught?—Personally, no. I deprecate anything that partakes of technical instruction to boys under 12 or 13.

11390. One can do much in the elementary school to develop intelligence and powers of observation by utilising natural phenomena in teaching without in the least degree trenching on anything technical?—I quite agree with that.

11391. You spoke of some confusion arising from schools being under different departments?—Yes.

11392. Are you familiar with the organisation in France and in Holland?—I know something of France; I do not know much of Holland.

11393. You are probably aware that the Board of Education, or rather the Ministry of Public Instruction, has charge of the elementary, the secondary, and the normal school there?—Yes.

11394. In so far as all that partakes of rural or agricultural instruction given in them?—That is for boys attending the elementary schools.

11395. And the secondary: that you are aware is entirely under the Ministry of Public Instruction?—Yes.

11396. When you come to deal with the rural and agricultural subjects technically, as in the *école pratique d'agriculture* and the national colleges, it comes under the Ministry of Agriculture?—That is so.

11397. It is quite easy to maintain that distinction if you keep before your mind that you are using the subject in one case educationally and in the other case technically?—I quite agree with that, but it wants very careful watching.

11398. So long as you have a clear view of your objects and your methods, there is no real difficulty in maintaining that distinction?—No, there is no difficulty, but there is great danger.

11399. You must prevent the two from overlapping, the teacher of capacity and the teacher who has to develop a particular type of character, and the teacher who is using a subject to teach a trade?—Yes, you want a clear definition of the duties of each department.

11400. They are not incompatible?—No, it is perfectly possible.

11401. That is the ideal scheme to prevent rivalry?—It seems the only one.

11402. (*By Lord Barnard.*) Does your Department deal with the diseases of animals?—Yes.

11403. And the restrictions and regulations and so on with regard to that?—Yes, we undertake a vast amount of work outside what I have been describing to you as the purely agricultural side.

11404. Do you publish any leaflets?—Yes.

11405. Have you reason to think that they are useful?—Judging by the demand for them I should say they must be; there is a tremendous demand for them.

11406. Will you tell me what the Agricultural Council is composed of?—As to two-thirds of members nominated by the County Councils, and as to one-third of members nominated by the Department.

11407. (*By Lord Belper.*) I have not had the advantage of hearing the principal part of your evidence. Have you spoken at all about research work?—To a small extent. I have pointed out that we have hardly yet got to the stage in Ireland when we may be said to have entered upon the research stage, because we have been training our own men. We began in 1900. It took five years according to our system before he was trained, and there has been only two years since, so that we have hardly got to that stage when we can say that we have entered very seriously on research work, but in our principal agricultural college, that is the Royal College of Science, there is a considerable amount being done, and as to the other forms of research we usually employ an outside man and give him a grant, and ask him to work up any special subject.

11408. Have you special funds for devoting to that, or can you get a grant from the Government for that particular work?—We must take it out of our own endowment; we have £100,000, and we must take it out of that.

11409. I suppose you would consider at all events in any college where any well advanced work was being done, that it was most essential that research work should be attached to that?—Most assuredly.

11410. And that that is a work that Government ought to encourage to a large degree if they want these colleges used to the best advantage?—I have no doubt about it whatever.

11411. I suppose in Ireland at present the research work you have been doing is of a somewhat elementary character, dealing particularly with local problems, I presume?—Yes, all problems specially applicable to Ireland, particularly diseases of animals that are a source of loss to Irish stock owners, and in various other ways. We have made

investigations with regard to creameries, the disposal of sewage, investigations with regard to tobacco growing, the manufacture of peat fuel, and a variety of forms of work of that kind. We have carried on very extensive investigations into the flax-growing industry. Those are all directly applicable to some Irish industry. We have not undertaken what you may call purely scientific research, but what you might describe as problems of general application to the whole country. We have to some extent entered into pure scientific research, but as far as possible it has had a direct bearing on some Irish problem. I recognise the need for an entirely independent research station that will devote its time and attention not purely and simply to Irish problems, but to agricultural problems of general world-wide interest.

11412. You, I think, gave very interesting evidence to

Sir Kenelm Digby's Committee when it was sitting?—I did.

11413. No doubt we shall have the advantage of seeing that when the report is published, as it very shortly will be?—Yes.

11414. (*By Professor Middleton.*) I understand that no part of the sum of £100,000, which you have spoken of, is used in connection with the administration of the Diseases of Animals Act?—No, theoretically all the administrative expenses are put on the annual Parliamentary Vote, although in practice the Treasury may be sometimes rather hard to move; and if I want an inspector or a clerk we simply dip into our own fund and do not wait for the Treasury, and take our chance of getting it from them afterwards.

Prof. J. R. Campbell.

26 June, 1907

Mr. F. O. SOLOMON, called and examined.

11415. (*By Lord Barnard.*) You are I believe the head master of the Dauntsey School in Wiltshire?—Yes. I went to the North of England in 1890 as the agricultural master in the North-Eastern County School and I worked in the North of England for ten years, chiefly as agricultural lecturer in the Armstrong College, Newcastle, and as lecturer in the counties of Durham and Northumberland.

11416. How long have you been at the Dauntsey School?—Nearly eight years.

11417. The school is at present administered under a scheme under the Endowed Schools Acts?—That is so.

11418. It is really based on a very ancient endowment?—Yes, by Alderman William Dauntsey, who died in the sixteenth century.

11419. It has been very generously subsidised by the Mercers Company since the date of the scheme?—It has been permanently endowed by the Mercers' Company.

11420. The object in view is to provide, would you call it, a secondary school with an agricultural bias, or is it a purely agricultural school?—It is an agricultural school. All the boys in the school receive a sound general education, and the boys in the upper divisions take a theoretical and practical course of work in agriculture and land surveying, natural science and so on.

11421. Then it is a secondary school?—It is a secondary school under the Board of Education; at the present time it is under the Board of Education.

11422. I do not mean what it is under. What I want to get from you is whether it is a school for the purposes of giving general education, including special education in agriculture, or whether it is an agricultural school pure and simple?—It is a school giving a general education to every boy; it is a secondary school; the ages of the boys are from 13 to 19.

11423. I have the scheme here. To go back to the first words you used, that it is a secondary school under the Board of Education, is the scheme carried out?—The scheme which you have in your hands is being amended; the Governors' suggested amendments are in the hands of the Board of Education and the Board are considering them now.

11424. So that it is in a state of transition?—Yes, but from the point of view of this Committee I think perhaps there is nothing very important under enquiry.

11425. Would this provision be effected: "Once in every year the school and the school plant shall be inspected, and the scholars shall be examined under the direction of the Board of Agriculture"?—Yes, I expect the Board of Education will assume those duties.

11426. (*By Mr. Medd.*) Your idea might be that it would be taken on as a technical day school by the Board of Education?—No, as a secondary school.

11427. Is the school not under the jurisdiction of the Board of Agriculture at all now?—No.

11428. (*By Lord Barnard.*) Then you ignore this provision in the scheme—you do not comply with it?—The Board of Agriculture has been inspecting the School every year since I have been there, but really our inspectors are now Board of Education inspectors.

11429. You receive no grant from the Board of Agri-

culture?—No, we do not receive any grant from the Board of Agriculture; we never have done.

11430. You are not in touch with the Board of Agriculture at all?—The Board of Agriculture is in touch with us, I think—I mean that one of their inspectors visits the school every year, and so on. The reason we are under the Board of Education—

11431. I do not want to trouble about the Board of Education, because that is rather outside our sphere. This Committee is appointed by the Board of Agriculture, and if you are in process of cutting off your connection with the Board of Agriculture any evidence you can give will not be of any great value to us, it seems, except on the subject of agricultural education generally. I do not think you need trouble yourself very much with the affairs and the position of the school?—Very well.

11432. (*By Mr. Medd.*) Is it not the fact that all your boys on attaining a certain standard, or age, undertake agricultural subjects?—That is so.

11433. So that you are not a secondary school with an agricultural side at all?—We are not a secondary school with an agricultural side. We are rather a secondary school with an agricultural bias.

11434. If one adhered to strict terms you are not a secondary school at all—you are an agricultural school?—We are bound to call ourselves a secondary school or we should not get a grant from anybody.

11435. You would as a technical day school?—I understand that we should get no grant from the Board of Agriculture, and we should not get any grant from the Board of Education.

11436. As a technical day school you would?—Does "day school" mean boarding school as well—do you mean in contradistinction to a night school?

11437. Yes.—Quite so: perhaps we should, I do not know.

11438. Is any practical instruction given at your school?—Yes, more or less.

11439. (*By Lord Belper.*) How much more and how much less?—It depends upon the age of the boy. We found that it was impossible to carry out the scheme in its entirety; we could not teach to boys of 13, and even those of 17 or 18 years of age, all the subjects enumerated in the scheme.

11440. Is there any land attached to the school?—Fifteen acres.

11441. For agricultural work?—Yes, and gardening and fruit cultivation.

11442. (*By Mr. Latham.*) At what age do you take these boys?—From 13 to 19.

11443. Do they come to you as soon as they have left the elementary school?—There are comparatively few boys from elementary schools.

11444. Where do they principally come from?—They are principally farmers' sons.

11445. That have previously been to another secondary school?—Yes, as a rule.

11446. But if not?—They would perhaps have had private tuition, or they may have come from a public school.

Mr. F. O. Solomon.

Mr. F. O.
Solomon.

26 June, 1907

11447. (*By Lord Barnard.*) Are you familiar with the finance of the school?—Fairly.

11448. Are you in any way responsible for it—does it pass through your hands?—No.

11449. Then I do not think we need ask you any questions on that point?—I know something about it.

11450. (*By Mr. Latham.*) Would you explain the fifth head of your *précis*—"The reason the school is placed under the Board of Education"?—That is a matter that has been the subject of very much consideration by the Governors—I mean as to whether the school should come under the Board of Agriculture or under the Board of Education. In the first place, the Board of Agriculture seemed to have no money at its disposal, and the Governors found that they would have to go elsewhere. The Governors have equipped the school very thoroughly; it is an exceptionally well equipped school; it is probably one of the best equipped schools in Wiltshire; the buildings are extremely good—and although I say it myself, there is a thoroughly efficient staff; and the Governors, quite rightly I think, thought that they were entitled to a grant from public funds. Another reason is that for boys of this age, from 13 to 18 or 19, a general education is after all the most important and first consideration, and so the Governors thought primarily they must give a good secondary school education. Another reason for the school coming under the Board of Education is the position of the assistant masters. I take the agricultural subjects myself, also natural history and land surveying and kindred subjects; my colleagues take the general school subjects, mathematics, English, and so forth, and for those men their position might become a little bit difficult. It is better for them to be under the Board of Education, because it keeps them in touch with the "world" of secondary education so to speak.

11451. (*By Lord Barnard.*) Should I be right in thinking that the case of this school is totally different from that of any other we have heard of; that is to say, in its inception it was an attempt to have a purely agricultural school and then for various reasons you now find that that is impracticable and inadvisable?—I consider it to be an agricultural school at the present time.

11452. What the Committee would like to ascertain is this: Should we recommend that purely agricultural schools should be established all over the country, or should we say it has been tried at West Lavington and it has been found desirable to have a good secondary school, with specialisation on agricultural subjects?—I think that similar schools to ours would be a success in other parts of the country; I think they are very much more desirable than agricultural colleges; but every boy, no matter what he is going in for, should have a good general education.

11453. (*By Lord Belper.*) Quite so, but you need not necessarily give it in the same place as you give agricultural education?—I think if you are giving agricultural education for boys of 13 to 19 that you would have to ensure that those boys, whatever school they attended, were also getting a good general education.

11454. In an agricultural college, I take it, the boys would have had a good general education before they came there?—Yes, but this is an agricultural school.

11455. We have been discussing agricultural colleges and agricultural education, and the general routine would be, would it not, to get boys after they have had a good general education, so that they could devote the whole of their time at the College for the purpose of learning scientific and practical agriculture, in which they are going to spend their lives in the future?—Yes, that would be so at an agricultural college.

11456. (*By Mr. Medd.*) I think you mean that this general education is essential for every pupil up to the age of 14 or 15, but that this school then takes them on in agriculture instead of any other subject, and it then assumes for boys of that age the character of an *école pratique d'agriculture*, that is, an intermediate school of agriculture, the only point being that for the purposes of grant-earning it has to come under the Board of Education; is that what you mean?—Yes, that is so. The boys in the first two forms in the school take no agriculture, or very little, and after that I consider that they are in a position to start their agricultural work, and they do so.

11457. General education is what you are giving them up to the age of 14 or 15?—Yes.

11458. Then they all join agriculture?—Then they all take the agricultural course.

11459. (*By Mr. Latham.*) Do you compel every boy to take agriculture?—I have no need to compel them; they do it of their own accord, because it is made attractive and useful, and they like it because for the most part they are boys who are going to be farmers, or to pursue some other rural occupation.

11460. (*By Lord Barnard.*) You mention here "Subjects related to agriculture that are taught at the school." What, precisely, do you mean by that?—Agriculture itself, such as the study of soils, manures, crops, live stock and so on, also horticulture, dairywork, and land surveying.

11461. The usual thing?—Yes.

11462. You have done nothing out of the ordinary?—No; the subjects are those usually comprised in an agricultural course.

11463. You wish to say something on the subject of boys being taught practical farm and garden work?—They have to take a certain amount of practical farm and garden work in their course.

11464. The words you have got down here are: "The extent to which practical farm and garden work should be engaged in by boys"?—I think for boys of this age it is a matter that requires very careful handling—I mean as to the amount of practical work they do.

11465. Perhaps you will tell us why you think it requires careful handling?—I find that the boys take a great deal of looking after when they are out at farm work, and I should not suggest that the younger boys should give much time to it; I think that it ought to be restricted to the older boys of the school, and that it should be restricted to a limited number of operations, and that those operations should be suitable for boys, and, if possible, should be operations that they will not have a chance of learning elsewhere.

11466. Some of the witnesses here have told us that the only place on which a young man can with advantage learn the practical working of a farm is on a farm, and that he can do it better on his father's farm than at any school. Do you agree with that?—I think a farm is the proper place to learn practical farming.

11467. You say, "Subjects other than agriculture should form part of the course"; what is your suggestion with regard to that?—Those would be such subjects as mathematics and English subjects, besides, of course, science.

11468. A good general education?—Yes, the subjects comprised in a good general education.

11469. Your next head is, "The age at which boys should commence their agricultural studies." What age do you suggest?—About 15, as a rule.

11470. For how many years should they continue them?—It should depend rather upon the boy's general education than upon his age. I would let him commence his agricultural course when he gets into a certain form in the school rather than let this depend upon his age—at least, that is the system that I adopt, and generally it is at about 15 years of age.

11471. "The type of students for whom an agricultural school is specially required"?—For boys who are going to be farmers or who are going abroad, or intending to pursue any calling in rural districts.

11472. As a matter of fact your school is not limited to boys who are going to follow those particular pursuits?—No, but of late years we have had few who are not going to pursue some calling of that nature.

11473. Perhaps you will agree with me that the boy who was not going to have anything to with rural life would not want to learn these special subjects?—Quite so, but when properly handled they are subjects of considerable general interest.

11474. I do not quite understand the last thing you put down here, "Opinion as to whether schools of a similar type to Dauntsey would be successful if established at other places"?—With regard to boys who are intending to take up rural pursuits, I hold they would derive substantial advantage from attending an agricultural school in preference to an ordinary school; and I believe agricultural schools in the country would be of greater practical advantage to the average farmer's son than agricultural colleges, because however desirable it may be for them to go through an agricultural college—and I have my doubts about that—the fact remains that probably five-sixths of the farmers of the country for many years to come will not go to an agricultural college, but they will all go to a school of some kind, and I think it highly desirable that it should be an agricultural school, that they should go to—

Mr. F. O.
Solomon.

26 June, 1907

a school like Dauntsey; I believe that thoroughly good work is being done at the school.

11475. Is not the aim of a school and the aim of a college rather different?—I take it to be so.

11476. Is not there room for both?—Undoubtedly there is room for both, but I think that the agricultural schools would have a very good chance of getting filled, whereas the agricultural colleges are at the present time not very full.

11477. (*By Lord Belper.*) Do you not think it would be better that we should take that from the colleges themselves. I do not think we can accept that as a general statement which is borne out by the figures which have been given us from the principal colleges?—I rather meant to imply that so many, many more people would go through an agricultural school than would go through an agricultural college.

11478. That somewhat depends upon the size of the school and the size of the college, and it also somewhat depends on the course in the school and the course in the college, and how long each pupil is going to stay there, and so on. I do not suppose you would pretend that in a school you could get the instruction in the higher branches of agriculture and scientific agriculture that you could get in a college?—No.

11479. They cover to a certain extent different ground, and a pupil who went to an agricultural school like yours would very likely, if he wanted to qualify himself, at all events for the higher positions in agriculture, have to go to a college as well; by higher positions I mean as a teacher of agriculture, or to fill some of the better positions abroad?—Yes, that is so, and I think that the agricultural school should confine itself to training farmers and not attempt to train lecturers and professors.

11480. (*By Lord Barnard.*) Have you not overlooked the necessity of the work that is done by these colleges and collegiate centres in passing pupils through to the higher branches of scientific knowledge in relation to agriculture. We have had evidence from no less than two places, Bristol and Birmingham, that they propose to take up now this higher agricultural work that you have not anything at all to do with?—Yes, that is so: I quite recognise the importance of such work.

11481. You must not limit the acquisition of agricultural knowledge to the teaching of little boys?—No.

11482. Should I be right in your opinion in describing the aim of the school to educate a boy for the ordinary walks of life, and the aim of the college to train him in some special branch of knowledge?—Yes, that is what the colleges do, of course.

11483. Supposing you had a great many more schools of the Dauntsey type, how would you get over the difficulty of providing for those boys who are not going to be farmers—you would have to duplicate secondary schools all over the country?—Of course, comparatively few agricultural schools would be required to take all those who are going to be farmers, and who could not go through an agricultural college.

11484. I gathered from you just now that you would like a great number of these schools?—Not necessarily a great number of them, but distributed over the country I think they would do a vast amount of good.

11485. Why do you want the agricultural classes to be treated differently from any other class? I am not aware that any other class find it necessary to have special schools for them as places of education as distinct from training. Take my own profession, that of the Bar; I never learnt any law at school, or at the University either, and I do not think any other professions do?—I feel that the education given at the Dauntsey agricultural school, is a good one for farmers' sons, and I think that it is specially appropriate to boys who are going to be farmers; that is my meaning.

11486. (*By Mr. Latham.*) Will you define what your teaching is from the agricultural side; I do not think we have found out what you do teach?—We give a course of lectures in agriculture and horticulture, and there is a course in land surveying and levelling and natural sciences, with a considerable amount of laboratory instruction, and also a course in dairying.

11487. I know a very great deal about practical agriculture, and I should like to have it defined what you teach; what do you teach them as practical agriculturists?—As far as we can go with boys of that age we teach them garden work, how to work in the garden and how to work in the field, grafting and budding and pruning and that

sort of thing, and they take part in the work of the cultivation of the agricultural plots.

11488. Do you instruct them in ploughing and sowing?—We do not teach them to plough.

11489. Do you teach them the valuation of stock?—As far as we can in the time; of course they leave us generally at about 18, so we do not profess to give a course similar to an agricultural college; we do not profess to go so deeply into the matter.

11490. Do you teach them anything about the ways of cattle?—Yes, as much as we can; we have the run of the farms in the neighbourhood by arrangement with the farmers, and I take the older boys in the school round the farms periodically.

11491. And ask them to value the cattle as to weight, and so on?—Yes, and we try to tell the ages of the horses, we see the cultivation of the crops, and that kind of thing, as far as time will allow us, of course.

11492. You have answered all my questions. Do not you think that every single one that I have asked you and that you have answered should be taught by the lads' fathers?—There are some of the things we teach them that I think the lads' fathers would not teach them.

11493. Just name one thing that you teach that you do not think the ordinary agriculturist would teach his son?—I do not think that he would teach him to prune fruit trees properly, nor graft, nor bud.

11494. That is rather more horticulture than agriculture; I am referring to agriculture?—I do not think he would teach him the dentition of farm animals—merely to take an illustration; I hardly think he would.

11495. You think the ordinary agriculturist of the present day is a very ignorant man?—No, my father was one, and I should not like to be thought to imply that.

11496. I am a farmer myself and I want to defend my class. I think the ordinary agriculturist is an excellent judge with regard to the dentition of farm animals?—I understood that the question was not so much what the farmer knew, but what he was going to teach his son.

11497. I would teach my son the dentition of farm animals. Do you think the instruction given at your school is as far advanced as the instruction given by the man that takes farm pupils?—I think you can hardly compare the course at our school to that, because our boys are younger; they leave me at about the age when they would go to a man as a farm pupil.

11498. After they have left your school for educational purposes you take them for, perhaps, two years on the farm?—They generally go on their fathers' farms after they have left me.

11499. What is left for you to teach them on the agricultural side?—The same remark would be applicable, surely, to an agricultural college, would it not?

11500. No, science comes in there?—We try to teach that; we have lectures and laboratories, and so on.

11501. Have you any demonstration plots?—We have experimental plots.

11502. Demonstration plots?—Yes.

11503. Where are they carried out?—Just at the back of the school, on the land belonging to the school.

11504. You do not go about from farm to farm; you do not take land in the adjoining districts and experiment in that way?—No.

11505. I suppose you have not any experiments on grass?—We have not any experiments in grass this particular year, but we have experiments in potatoes, corn, roots, and garden crops, and so on, and we publish the results each year in the school magazine.

11506. You are in connection with the Wiltshire County Council?—We receive a grant every year from Wiltshire.

11507. How much?—£100 a year.

11508. Do you receive anything from Hampshire?—No.

11509. You are only in connection with Wiltshire?—We receive that grant from them.

11510. Is that ear-marked for you at all?—It is a grant made each year to us.

11511. Is it for any particular purpose?—No, I think not; it is for the general school funds.

11512. With regard to the dairy teaching, what form does that take?—We get the services of the County Council instructress, who comes round regularly and gives a course

Mr. F. O.
Solomon.

26 June, 1907

which includes both theoretical and practical work. It is the Wilts County Butter School.

11513. Is the dairy work done at your school?—Yes.

11514. You do not have any travelling dairy?—The Wilts County Council have that.

11515. I perfectly understand that. You have nothing to do with the travelling school?—No, I have nothing to do with the travelling school.

11516. Nor the school?—No.

11517. You do not teach cheese-making?—A little cheese-making is done in the ordinary course when the County Council instructress comes.

11518. What is the length of time you devote to cheese-making?—It is generally amongst the boys who have already taken a butter-making course, and they, perhaps, take cheese-making instead, or partially with the butter course; we do not profess to teach cheese-making.

11519. You do not take them round to different farms and give them a general practical education there in cheese-making?—No; there are not any very near to us; I do not think I know of a farm very near where cheese-making is done now.

11520. Do you teach them any farriery?—For the last two or three years there has been no farriery taught at the school.

11521. I am really very much at a loss to know exactly what you call this agricultural teaching that you give to these young people from the practical side. Do you teach them anything about seeds?—Yes, we have a course on seeds and one on manures.

11522. Are lectures in agriculture given?—Yes; three or four lectures per week throughout the year.

11522A. By whom?—I give all the lectures on agricultural subjects.

11523. When these boys leave you, do they go through any practical examination?—No.

11524. Then, virtually, they are taught by you in your school and they are passed along without any examination to see whether your teaching has been proficient or not?—There is no external examination at the present time; the school is inspected every year; hitherto it has been an inspection carried out jointly by the Board of Agriculture and by the Board of Education.

11525. You give them no certificate?—There is no certificate.

11526. (By Mr. Medd.) As a matter of fact, your school is providing intermediate agricultural education?—Yes—do you mean between a school and a college education?

11527. Yes.—It certainly does not pretend to be an agricultural college.

11528. No, but it is providing a useful agricultural education; I have seen your excellent equipment, and you have plenty of available gardens and ground, and you are giving intermediate agricultural education; that is to say, education which an elementary school could not give and would not be appropriate for—between that and the advanced college?—Yes.

11529. I may say that the agricultural side or bias of your work has tended to increase?—Certainly.

11530. Until to-day it has monopolised the school. Each boy, after a certain stage, or age, learns agriculture?—That is so.

11531. Amongst your pupils you must have each year a certain number of exceptionally clever boys?—That is so.

11532. For whom it might be advisable that they should proceed to an agricultural college?—Yes.

11533. I suppose you would have no objection to work under a system under which you became responsible for the intermediate agricultural education of a certain area, and by which your cleverer boys proceeded to the advanced college serving that area?—Yes, that could be well done; it would be very useful to me.

11534. No county alone, you will agree with me, could to-day provide every grade of agricultural education desirable; the expense would be prohibitive?—Yes, it would be very undesirable to attempt such a thing.

11535. It would be very undesirable to have schools such as yours multiplied everywhere?—Very undesirable; one could serve an area of, I should think, three or four counties as a rule.

11536. In other words yours could quite well serve Wilts,

Somerset, Gloucestershire, and perhaps Monmouth?—Yes, probably.

11537. Basing would serve Oxford, Berkshire, Hampshire and Dorset?—Of course, we differ considerably from Basing, I imagine; we give the general education.

11538. You do. That is assuming Basing is capable of expansion and development on your lines. The point of my remark is that you are capable of serving that area, and the best lads could proceed to such a centre as Cirencester for the advanced instruction?—Yes, if that could be done it would be a very good thing.

11539. It would enable that white patch on the map to be really better coloured than any other section, because you would have your elementary school serving the intermediate school and the intermediate school serving the advanced college?—Yes; I always have two or three sharp boys who are capable of going ahead.

11540. I think there has been a little misapprehension this afternoon with regard to your aims. Would it not be a good thing to allow the Committee to see your school and see what you are doing?—I should be very glad, indeed, if any members of the Committee could come down at any time.

11541. (By Lord Barnard.) Might I add that it would be also of great help to the Committee if we could see any draft scheme which is in course of preparation now, and which is likely to become law, so that we may really be able to appreciate the exact position of the school?—Yes, I think it would.

11542. (By Mr. Medd.) I am afraid that you have rather conveyed the impression that the school is in a more or less undefined state, and that you do not quite know what your aim is?—Of course, I cannot speak quite definitely on some matters, seeing that the scheme is *sub judice*.

11543. If you would allow the Committee before it reports to see your scheme and allow the members of the Committee to see the school, it would be better in everyone's interest and, certainly, the better in your interest?—I should be very glad to see any members of the Committee if they could come down.

11544. (By Professor Middleton.) In answer to Mr. Medd you said that you often had boys whom you would like to send on to an agricultural college?—I have one or two most years.

11545. In the case of those boys would you adopt the same course of study as you follow with the remainder of the school?—I think the boys who are going on to an agricultural college ought to take no agriculture while they are at school at all.

11546. That is just what I should say, too?—I am bound to admit that.

11547. Boys going on to an agricultural college ought to take no agriculture at school at all, you say; what ought they to take?—They should get a good general education whilst they are at school to fit them to understand thoroughly the course they are going to take up when they enter the agricultural college afterwards.

11548. If they take science subjects at a school of your description before going on to an agricultural college, which subjects would you prepare them in?—Chemistry, physics and some biology.

11549. The great majority of your boys would not proceed, and you do not intend them to proceed, to an agricultural college?—That is so, and I would really rather that they—that is, the majority—did not proceed. I pretend to train farmers, and I think that I do train farmers. The course is not sufficiently advanced for training lecturers.

11550. So that when Mr. Medd used the term "intermediate school" you did not in your answer to him mean that your school was an intermediate school between the elementary school and the college?—No. Of course, in a scheme such as Mr. Medd was suggesting, that is the position we should occupy; if we train and send boys on to college we should be an intermediate school.

11551. Yes, but that position in such a scheme as Mr. Medd suggested is not the particular object for which your school exists?—No; our school is mainly for tenant farmers' sons; and the great majority of the boys are tenant farmers' sons, and I have any amount of evidence from the boys of the great value they have found in the instruction afterwards. I consider there is no subject that is of greater value in a school in teaching than the subject of agriculture, apart from its utilitarian value. I am of opinion that it is a very wide subject and one which,

when properly handled, has great educational value in training boys in habits of observation and thought. I think that the establishment of a museum, for example, is in itself a most excellent thing; we have established a museum at Dauntsey since I have been there, and it has been of great educational value both to the staff and the boys.

11552. The Chairman asked you why you should set up a type of schools specially for the agricultural industry and not for the other industries. I do not know that I should suggest an answer, but from what you have said to me now it appears to me that your answer would be this, that the sons of agriculturists have to go to school in any case, and that, therefore, you should provide them with this type of school rather than with the ordinary grammar school?—Yes, that is just what I mean, and if such schools were provided for them, I think—of course, I speak from the

experience that I have had down there, and from what many of the boys who have left have told me of the substantial benefit they have derived from the training they had with me—it would be an excellent thing for them.

11553. You would justify the expenditure not on technical grounds but on educational grounds?—On educational grounds; I consider agriculture to be a highly educational subject.

11554. (*By Lord Barnard.*) Mr. Latham would like to know on what grounds you put down here that you get assistance from other County Councils besides Wiltshire?—We have had scholarships from other counties besides Wiltshire in the past.

11555. A scholarship is meant to be of assistance to the scholar and not to the school, is it not? Have you ever had any grants?—I believe not.

Mr. F. O.
Solomon.

26 June, 1907

TWENTY-THIRD DAY.

Thursday, 27th June, 1907.

PRESENT:

The Lord BARNARD (*in the Chair*).

The Lord BELPER.
Lord MORETON.
Mr. THOMAS LATHAM.
Mr. DAVID DAVIES, M.P.

Mr. J. C. MEDD.
Professor T. H. MIDDLETON, M.A., M.Sc.
Mr. A. E. BROOKE-HUNT (*Secretary*).
Mr. H. L. FRENCH (*Assistant Secretary*).

Miss WILKINSON, Principal of the Horticultural College, Swanley, called and examined.

11556. (*By Lord Barnard.*) Please tell the Committee in what capacity you attend?—I am Principal of the Horticultural College at Swanley.

11557. Is that a voluntary college—I mean neither a Government nor a local authority institution?—That is so. We get a grant from the Board of Education, but the institution is mainly carried on by the fees of the students.

11558. Kindly explain how your College originated?—It was started in 1889 by a few persons as a limited liability company.

11559. For what purpose?—For men.

11560. But to do what?—For the purpose of teaching them gardening and general horticulture, fruit growing, etc. Women were first admitted in 1892—and in that year the institution was incorporated by license of the Board of Trade, so as to enable us to receive grants from the County Council. The license limited the payment of dividends.

11561. I suppose you are a non-profit company, with no power, or a limited power, to divide profits?—That is so. I think we can pay 5 per cent. dividend, but not more.

(*By Mr. Medd.*) It is the same as the Girls' Public Day School Company, which is limited to 5 per cent. I think the same rule applies here.

11562. (*By Lord Barnard.*) It would be interesting to the Committee to learn the reasons why the change was made from men to women students?—When women were first admitted there were only a few who attended, but afterwards there was an influx of them, and their number gradually increased until we had about fifty women students and only ten men students: it was then considered scarcely worth while to keep the men, as they could get their training elsewhere.

11563. That was a natural evolution, as the institution developed itself?—Yes.

11564. Where do the women reside?—Some reside at the College, some at South Bank, or at boarding houses started for their accommodation. A few go to the Colonial Branch in the village.

11565. Is that a separate building?—Yes. A few of the students over 25 years of age live in the village.

11566. I suppose the constitution of the governing body is regulated by the Articles of Association?—Yes.

11567. What does the governing body consist of?—It consists of persons elected by the members of the College and representatives of public bodies who give us a grant of over £50 a year, and there are six honorary members.

11568. Are there members co-opted by the governing body?—They are elected by the general body at the annual meeting in March.

11569. How often does the governing body meet?—Once a month—except in August and September.

11570. Is there a clerk or secretary?—I act as secretary at the meetings of the governing body, but we have also a secretary at the College.

11571. Do you send reports of your proceedings to the County Council?—No, because that body does not give us any grants. We do, however, as I have stated, get a grant from the Board of Education.

11572. What are the courses at the College?—There is a diploma course and a practical certificate course.

11573. How long do these last?—They both last two years.

11574. What is the difference between the two?—Those

Miss
Wilkinson.

27 June, 1907

Miss
Wilkinson.
—
27 June, 1907
—

entering for the certificate course have to pass the Royal Horticultural Society's examination, the College examination in practical work, and do practical work for two years. In the case of the diploma course the students have, in addition to the above examinations and work, to pass the examination of the Board of Education for botany and rural economy, and they also have to take two of the following subjects: dairy work, poultry or bee-keeping.

11575. The diploma course is the higher one?—Yes. The certificate course is more for the ordinary practical gardener.

11576. With regard to the diploma course, what is it intended to fit the women for?—It gives more experience and more general knowledge, and many of the students take it with the idea of themselves becoming teachers.

11577. Is there any research work?—Several have gone into research work after leaving us.

11578. Are the women who get the diploma qualified for research work?—Not without further training, but after the end of the two years a student has made up her mind whether she wishes to do it. Some of our students have taken scholarships for the Royal College of Science.

11579. The certificate course is more intended to fit women for practical work?—Yes.

11580. Either for employers or on their account?—Yes.

11581. Have you a natural history course?—We hope to start that in the autumn—in September, 1907. We hope it will fit our students for taking posts in girls' secondary schools where there are openings for botany and gardening.

11582. (*By Mr. Medd.*) Is there not a "nature study course" for teachers which is already recognised by the Board of Education?—Yes, during August.

11583. (*By Lord Barnard.*) Have you often been asked whether you can suggest or recommend students qualified to be teachers?—We have been repeatedly asked by secondary schools, but we have been unable to recommend any sufficiently well qualified. We had an application the other day from a large school in Berkshire, but we had no one ready who was well enough qualified.

11584. Then there is a demand?—Yes. I could have placed five last year if we had had them fully qualified, and this year we have had one application.

11585. If you had increased facilities do you think you could supply that demand?—Yes. I have seen many headmistresses who have told me that there is a demand for a student who has taken the natural history course.

11586. You have some courses for elementary school teachers?—Not specially for them. The "nature study course" is for both secondary and elementary school teachers.

11587. Do you find that course well supported?—Yes, very well. In the first year we had 55, in the second 43, and last year 53.

11588. Do these students live at the College?—Wherever we can place them. This year we expect to have 60, and I suppose every available bed in the village will be occupied.

11589. Do they come in the vacation?—Yes, for a fortnight.

11590. Do they come only in the vacation?—We have short courses for six or seven weeks during the summer term in gardening, bee-keeping, fruit-preserving, dairying, and poultry-keeping. We have students at almost every part of the year. With a view to the training of teachers a course of natural history for third year students or teachers from other colleges or schools has been planned and will begin in September next. The short courses come in May, June and July, and the "nature study course" at the beginning of August.

11591. Then your staff cannot have much holiday?—They do not. Holidays are very difficult to arrange.

11592. Do students come at any time for special objects?—Generally, I think, to work in their own gardens, either in the open or under glass, for fruit growing, dairying, poultry-keeping, and bee-keeping.

11593. I mean do students ever come with a desire to inform themselves particularly with regard to the cultivation of some special product or crop?—Yes; some come with a special desire to learn about fruit growing. We have three now engaged in this study out of doors, and sometimes they specialise in work under glass. If the students come for the two years' course we advise them to take the general course first and then to specialise the last year.

11594. What does the college course include?—The subjects are practical and theoretical horticulture, botany, agricultural science and rural economy, entomology, book-keeping, green-house construction, bee-keeping, dairying, poultry, manual training and fruit preserving.

11595. What are the fees?—They are as follows:—

Full Course. For bed sitting-room from £96 to £120 per annum.

For cubicle bedroom from £80 to £89 per annum.

For tuition only .. £40

Extras. Dairy £3 3 0

Poultry-keeping £3 3 0

Bee-keeping £2 2 0

Natural History Course. For bed sitting-room from £96 per annum.

For cubicle bedroom .. £80 per annum.

For tuition only .. £35 ..

Short Courses—6 weeks. Bed sitting-room £16 16 0

Cubicle £13 13 0

11596. How many students have passed through the College?—410 women students in the years from September, 1892–1906. The average number from 1902 to 1906 was 74, and the present number is 70.

11597. Does that include students who come for two weeks?—Yes, but we have very few who come for so short a time; five weeks is more usually the shortest time.

11598. From what classes are the students drawn?—They are drawn from all classes. Of the present students, the fathers of 28 are professional men; 15 gentlemen; 18 are in business; 4 farmers; 1 merchant service, &c.

11599. What is the general age of the students?—They are over 17 years of age. At one time we took them at 16, but we found that rather young, and unless under special circumstances, we do not now take them so young, but we have them at all ages beyond that, and some over 60.

11600. What is the usual age?—I should say from 18 to 28.

11601. Young women in fact?—Yes.

11602. Have they been to secondary schools?—Yes, most of them.

11603. (*By Mr. Latham.*) I notice that you appear to have very few farmers' daughters?—We have only 4 of them now.

11604. Is that about the usual number?—We have always 3 or 4.

11605. And not often more?—Usually not more.

11606. (*By Lord Barnard.*) Can you furnish any particulars as to the after careers of students?—Yes. As follows:—

Landscape Gardeners	3
Market "	25
Head "	26
Under "	13
Working in Home Garden	49
"Jobbing" Gardeners	9
Teaching	23
Working at Science	5
Poultry-keeping	2
Manageress Milk Depot	1
Principals in Gardening Schools	2
Apiarist	1
At Royal Botanic Gardens, Glasnevin	2

161

Present Students 70

Living at home, not gardening, and dead .. 117

Lost sight of 62

Total .. 410

11607. Have you any further observation as to future careers and openings for students?—I think the students are best fitted to be head gardeners or garden mistresses in girls' secondary schools where the pupils take a gardening course, or as jobbing gardeners, but some become market gardeners and there are a few such who seem to do well.

11608. With regard to the 161 students mentioned in your table as working on their own account, are they married women?—Some of them are married women. Married women often give up the work with the idea of perhaps taking it up afterwards if necessary. Nevertheless, I think it is a good thing that they have had the training even if they do give up gardening for a time.

11609. Do you think that the bulk of your women students intend to earn their own livelihood, to qualify themselves for doing so, or do they desire to acquire knowledge that would be useful to them as married women?—That is a difficult question. Some who leave us go to take up posts and others go to live at home and to manage their own or their fathers' gardens.

11610. Do you know of any married women to whom the College course has been useful?—Yes; for instance I could mention one whose husband was a schoolmaster, but he had to give up that work on account of loss of hearing. He took to market gardening work and his wife came to the College in order to learn how she could best help him in that work. There is another student who married a Kew man and they are now in the West Indies, where she is helping her husband in gardening work.

11611. Should the Committee be right in saying that your College is useful to women whether they marry or not?—Yes; in many cases the women are able to help their husbands.

11612. I understand you have a list of the best openings for fully trained students on leaving?—Yes; it is as follows:—

- (1) Teachers of nature study and lecturers on horticulture under County Councils and
In training colleges and girls' secondary schools.
- (2) Inspectors or supervisors of school gardens in county elementary schools.
- (3) Head gardeners or garden mistresses in girls' secondary schools where the pupils take a gardening course;
Head gardeners in private places;
Head gardeners in institutions.
- (4) Market gardeners.
- (5) Jobbing gardeners.
- (6) Workers in their own or their parents' gardens.
- (7) Gardeners or fruit growers in the Colonies.

11613. Are there many openings for your students as head gardeners at private places?—Yes, we have now about 26 employed as head gardeners at private places. One of them is with Mrs. George Cadbury at Birmingham and has been head gardener there for ten years.

11614. Is it your opinion that the hard work of a head gardener is suitable for women?—The head gardener need not have hard work. It is the under-gardeners who do the harder and rougher work.

11615. (*By Mr. Latham.*) If the head gardener does not work what does he or she do?—The head gardener works, but does not do the hard work such as digging, etc. At Mrs. Cadbury's there are several men employed as assistant gardeners.

11616. (*By Lord Moreton.*) I suppose you would say that the head gardener does not do such work as a man would do for two shillings a day?—Quite so. The head gardener may work in the sense of showing assistants how to work, but I don't think that in the best kept places the head gardeners do much hard work. They may do the pruning of the trees and organising and arranging.

11617. (*By Lord Barnard.*) Then the result is that you think the work is not unsuitable for women?—No, not in the case of suitable women. Some of them may have to act as under-gardeners for a short time in order to gain experience.

11618. Would the same remark apply to those who are market gardeners?—The market gardeners do a good deal of the work themselves and it makes a good deal of difference whether a woman is working for herself or for someone else. It is more interesting if she works for herself, and she can arrange her own time for working.

11619. Are they doing well at market gardening?—Several of them seem to be doing well.

11620. From certain evidence given before us it seemed to be rather doubtful whether upon strict commercial lines—on the basis of the accounts being submitted to a professional accountant—market gardening could be made to pay, but I suppose most of your students have some private means?—Very little; only just enough to start their market gardens. They must in such cases have a certain amount, but they keep themselves by their gardening. I know two or three who are doing very well, and four more set up last year, but it is still rather early to judge whether they are likely to succeed. I know several who are setting up as fruit-growers.

11621. What do the jobbing gardeners get?—Wages

ranging from 4s. to 7s. 6d. a day, and they have rather shorter hours than the men.

11622. (*By Mr. Latham.*) Are they actual labourers?—Yes; in one case at Hampstead a jobbing gardener has two other women working with her and a boy. They have a good connection and are doing well.

11623. Do you send some to the Colonies?—Yes. We have sent about 15 to the Colonies.

11624. (*By Lord Barnard.*) I suppose that in many of the Colonies there are openings for fruit-growing?—Yes, in Canada, South Africa, and the West Indies. One of our students has gone to Quebec as head gardener in a large place.

11625. In short, you consider that the college courses fit women for Colonial work?—Yes, I think so.

11626. Have you a large staff?—We don't think we have too many. The staff consists of the following:—

Lecturers and Instructors:

Bee Keeping	1
Book Keeping	1
Botany Lecturer	1
Botany Demonstrator	1
Dairy	1
Entomology	1
Gardening Lecturer	1
Greenhouse Construction	1
Horticultural Science	1
Chemistry	2
Manual Training	1
Poultry	1

Garden Staff:

Head	1
Foremen	3*
Demonstrators	4†
and	
The Principal	1
Vice-Principal and Secretary	1

* 1 of these is a woman.

† 3 year students.

11627. Do they live on the premises?—Most of them live on the premises. Several, however, are visiting lecturers. The botany lecturer has a cottage in the grounds and the head gardener has another.

11628. Have you any difficulty in keeping your teachers?—No. The botany lecturer has been with us, I think, eight years; the head gardener for six years, and the lecturer on horticultural science since the college began.

11629. Do you consider your staff well paid?—I think we ought to give higher salaries, but unfortunately we cannot afford it.

11630. Are the members of the staff mostly women?—The women are:—the botany demonstrator, the dairy teacher, the gardening lecturer, the poultry teacher, and the forewoman and three demonstrators.

11631. Are the others all men?—Yes.

11632. What about the equipment of the College?—The equipment of the College so far as accommodation for teaching purposes is concerned is inadequate in many respects. It is as follows:—

Large lecture hall for 70.	
Small lecture hall for 18.	
Biological laboratory for 30.	
Chemical laboratory for 12.	
Large conservatory, stove intermediate, propagating and cool houses put up in 1900.	
14 Market houses each 100 ft. long.	
3 Smaller houses and frames.	
2 Potting sheds	
1 Garden office.	
1 Mushroom house.	
1 Carpenter's shop.	
1 Store.	
Dairy.	
1 Jam shed.	
Poultry runs.	

The grounds consist of 43 acres of land divided as follows:—

2 Fruit plantations	25 acres.
Grass land	9 "
Flower garden	2 "
Vegetable garden	5 "
Land covered by buildings, glass houses and frame yard	2 "

Miss
Wilkinson.
—
27 June, 1907
—

Miss
Wilkinson.
—
27 June, 1907
—

11633. (*By Mr. Latham.*) What do the 25 acres consist of?—I do not think I can tell you off-hand the exact measurements but I can tell you the purpose to which we apply these two fruit plantations, namely, the growing of apples, pears, plums, bush fruit, etc.

11634. Do you grow many gooseberries?—Yes, and vegetables. We have just taken down about 3 acres of oak spinney which we are going to plant with fruit trees in the autumn.

11635. (*By Lord Barnard.*) Certain County Council scholars are allowed to hold scholarships at your College?—Yes.

11636. How many have you now?—None at present.

11637. Do you approve of that system of County Councils sending their scholars to you?—Yes, they have included some good students, but I think it is a mistake to make the County Council examination, and especially the London one, so stiff; as when girls have passed it they often do not care to come to the College, and others who might make good students but who are not good at book work are unable to obtain the assistance they require to enter as students.

11638. When a scholarship is given, does it cover all the expenses generally?—Not in every case; in some cases the student has to make up £15 or £20 herself, and I think it is generally a very good thing that they have to do so, because a student works much better if she is responsible for some of the fees herself.

11639. You have a system of corresponding members at the College?—Yes.

11640. Would you tell us what those corresponding members are; I suppose they have not any pecuniary interest in it?—No, they are simply people who take an interest in horticultural education, and when we send them any of these papers they are able to give information about the College.

11641. You have furnished the Committee with some of those papers?—Yes.

11642. On the whole you consider the work of the College has been satisfactory?—I think very satisfactory, and I think all those who go down and see much of the life down there feel that it has done a very good work. The girls are very interested in their work, and it makes them strong and healthy.

11643. I suppose you do not consider that finality has been reached?—No.

11644. Can you tell us in what way you think the College could be improved?—Of course the fees barely pay for expenses; we consider the fees do cover the working expenses, but there is no margin left for improvements, and there are a great many improvements that we should like to make.

11645. Do you think that you ought to receive a grant from the central Government?—I think we ought to have something to improve the equipment of our College.

11646. Do you think the State ought to assist in providing that?—We do.

11647. (*By Mr. Medd.*) We are anxious, are we not, for aid from the Board of Agriculture if we can get it?—Yes, for the equipment of the College.

11648. Especially for the improvement of the equipment?—Yes.

11649. (*By Lord Moreton.*) An annual grant?—Yes, an annual grant.

11650. (*By Lord Barnard.*) On the ground, I suppose, that you are doing a good national work?—Yes, and work that is really wanted, and which improves the education and physique of our women.

11651. You have, of course, considered as the corollary of national aid a certain amount of national control?—Yes; we have that already from the Board of Education, and we find that of great assistance to us. The inspectors have taken keen interest in the work, and they have been of the greatest help to us in coming down and advising.

11652. You would not mind the College being treated, if it received national assistance as part of a national system, that is to say, that the work should be co-ordinated with similar work done elsewhere?—If we are not required to launch out into too great expense in order to gain a grant.

11653. It strikes me that your present system of corresponding members is already a commencement of what I mean, that is, that other districts should have an oppor-

tunity of knowing what is being done in your College, and of knowing the advantages that you can offer?—Yes.

11654. And that you should know what is being done elsewhere?—Yes; I always endeavour to find out what is being done elsewhere.

11655. Some suggestion has been made that there should be a consultative committee established in London. Do you think your Governors would be prepared to take part in such a central body?—I have no doubt they would.

11656. So that a national work could be run on national lines?—Yes.

11657. I do not wish you to infer that I am suggesting that your work should be interfered with?—I think we should be willing to do that—of course I cannot say definitely, but I am sure from what I know of the feeling of the governing body that they would welcome it.

11658. Do any of your students continue their education at University Colleges or Universities?—We have got one who is now at the Royal College of Science; she went on last year from us; she got a national scholarship in biology.

11659. Who keeps the accounts of the College?—Miss Kekewich, the Secretary, is responsible for them, she has a book-keeper under her.

11660. A paid book-keeper?—We have a student who is not able to pay her full fees; she was book-keeper at the *Illustrated London News* office for a number of years, and she is working out part of her fees by keeping our books. We have them audited every year. You were asking if any of our students are continuing any of their scientific studies. Miss Brenchley is working with Mr. Hall at Rothamsted and is doing exceedingly good work, and Mr. Hall is very anxious to keep her on as an assistant.

11661. It seems to me that laboratory work is work that a perfectly qualified woman might very well undertake?—Yes, and Miss Brenchley speaks of the great advantage the College course has been to her, and says that the knowledge she obtained at Swanley has been exceedingly useful.

11662. (*By Professor Middleton.*) Does the number, 410 women students, include those who have taken the "nature study course"?—No.

11663. You draw students from all parts of Great Britain?—Yes.

11664. I see you have only one correspondent in Scotland; do you have many Scotch students?—We have a few.

11665. You have several correspondents in Ireland; does that mean that you have more Irish students?—I think on the whole we have had more Irish students than Scotch.

11666. In a general way from what districts do your students come mostly?—I suppose from the home counties?—Ten from London, eight from Middlesex, six from Kent, five from Hampshire, three each from Somerset and Suffolk, four from Sussex, three from Yorkshire, three from Scotland, and as to the rest there is about one from each county.

11667. (*By Mr. Medd.*) The meetings of the governing body are held every month, are they not?—Yes.

11668. There is a permanent secretary, is there not, Miss Kekewich?—Yes, she is vice-principal and secretary.

11669. You were mentioning a lady who has gone to Quebec?—Yes.

11670. Could you tell us what she does there?—She is head gardener to one of the leading men in Montreal; she looks after the whole of the garden and helps with the organisation. She is only there six months in the year, as no out-door gardening can be done in winter in that part, and at present he has no glass. She lives with the family, and has a very delightful post in every way.

11671. Do any of your students come from abroad?—Some come from abroad; we generally have three or four foreigners.

11672. One Dutch baroness was a particularly good student, was she not?—Yes; she was with us for three years, and was very much interested in the work.

11673. I think she passed first in England?—She passed first-class in all her examinations.

11674. With the present number of students the fees are about adequate, are they not?—Yes.

11675. If we drop eight or ten it means a loss?—If we keep the numbers at 50 we can run without a loss; if we go below 50 we shall run at a loss. I do not know if you would be interested to hear that a student from the College,

Miss G. Sherris, has gained the gold medal of the Royal Horticultural Society, being bracketed with a student from Studley College. This is the ninth time in thirteen years a College student has obtained this distinction.

11676. (*By Lord Barnard.*) May I express on behalf of the Committee the appreciation of the way in which you have prepared your *précis*? It has been very useful to us. The Committee would also like to express their approval, if they may do so, of the way in which the

accounts are drawn; they seem to be admirably prepared, and show the position of the Institution at a glance. —I am very pleased you have appreciated it. May I say that I do not think anyone who has not stayed at the College can appreciate the amount of voluntary work that has been done since 1892. Nearly everyone who comes down gets greatly interested in the College and in the students, and help us very much indeed. The chief reason that we keep Miss Kekewich is because of her great interest in the work and the students.

Miss
Wilkinson.
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27 June, 1907
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Mrs. HOPKINSON, called and examined.

11677. (*By Lord Barnard.*) You are the Chairman of the Colonial Branch of the Horticultural College, Swanley?—Yes.

11678. Would you tell the Committee when that Branch of the College was established?—It was established in 1902, at the request of Miss Wilkinson, when we changed the College. We changed the College from a men's college, including women students, to a college for women only, and we thought it would be a very good thing to bring in domestic science and to form a branch in which to train girls, who would have an especially suitable training to go out to the colonies and take up posts there. We mutually agreed about it.

11679. The actual establishment of the department was carried out by the governing body?—It was carried out by me in the first instance, and then it was brought to the notice of the governing body, who took the official steps. Sir John Cockburn, who is now chairman of the College, joined the committee of the Colonial Branch immediately. It was a joint thing.

11680. It still remains part of the College?—Entirely—much more so than it was at the beginning. We publish our report in the same cover as the College report.

11681. Are the students trained in a different place—are they trained in the College itself?—They go to the College for the main part of their training; it is only the domestic part they take in the Colonial Branch, and a certain amount of elementary gardening in a garden attached to the Colonial Branch Home, but the gardening is taught principally at the College.

11682. The students of your department live in a separate boarding house?—They do at present.

11683. How many students have you?—There are usually about 12 in residence.

11684. Have you accommodation for more?—No, it is quite small; it is just an initial thing. I do not live there; I just take an interest outside in it. Miss Kekewich and Miss Wilkinson manage it, but I started it, and I took a great interest in it at the commencement, and I take a very warm interest in it now outside.

11685. The subjects you teach are set out in your *précis*?—Yes.

11686. I see they include cooking, domestic economy, hygiene and poultry-keeping are taught, and simple cottage gardening in the acre of ground attached to the house?—Yes.

11687. The students are also taught practical and theoretical gardening, elementary botany, agricultural chemistry, fruit preserving, dairying, poultry-keeping, bee-keeping, and manual training?—Yes.

11688. How long is the course?—The course is supposed to be for one year, but it generally is extended.

11689. The course in your department is very much the same as the first year course at the College?—Yes; some of the first year College course is omitted, and also such work as is considered of little value in the Colonies. The students are especially encouraged in fruit growing and preserving, dairying, poultry-keeping, and bee-keeping; there is also a certain amount of nursing taught by nurses, who come over from Parkstone Convalescent Home to teach elementary hygiene and other matters that are likely to be useful to girls in Colonial life.

11690. There is a minus—you omit a certain part of the theoretical part of the instruction that is given at the College?—We do.

11691. How is your department financed?—In the first instance friends and I joined together and financed it for

three years; we had the fees coming in, but the supplementary money was provided by us.

11692. Those were donations, I suppose?—Donations and subscriptions and so on. There is a little balance sheet here to show the initial stages of it. It was a comparatively small amount that was needed, but still it carried it on for three years; we said we would carry it on for three years, but that after three years it must run on its own account, otherwise it would prove that it was not wanted.

11693. You got some money from a trust, I think?—Yes, the Bawden Trust allocated £1,000 two years ago to the Colonial Branch—the income to be paid to the Colonial Branch.

11694. Do you know the terms of that Trust?—Not all; it is called the Bawden Trust; it supports a great number of educational things.

11695. You cannot have gathered very great experience as yet, as the institution has only been at work a short time?—No.

11696. But so far as the result of your experience goes, has the training that has been given been appreciated?—I think very much so, especially in Canada, where the domestic part was so much wanted. South Africa was the field that attracted me, and we are just beginning there. Sir Hamilton Goold Adams went down to Swanley with me last autumn, and was so very much pleased with what he saw that he has engaged a student to go out to be a teacher of gardening at Bloemfontein, on the staff there. This lady was not quite ready at the time and required a little more experience, but she is sailing next week to take up that important position.

11697. In future you anticipate being able to supply the Colonies with students from your Branch?—Yes. I do not know whether the letters dictated by Sir Hamilton Goold Adams would be of interest to you, if so I can spare you copies of them. Those are the original letters, and you will see how he speaks of our work. (*Handing documents.*)

11698. Your department is under the superintendence of an advisory council, consisting of a number of ladies and gentlemen who are all very well known?—Yes.

11699. The actual management is committed, I suppose, to an executive committee, of which you are chairman?—That is so.

11700. How often does that committee meet?—About once in two or three months, just as it seems needed.

11701. Miss Kekewich and Miss Wilkinson do the detail?—Yes, they are on the spot and they do the detail.

11702. How many students have you passed through this Branch up to the present?—Sixty-five. I have a *précis* here of what they have taken up and of what they have done.

11703. I see from the *précis* you have put in that although a good number of them have gone to the Colonies there are some who have not done so?—Yes.

11704. Do you know whether they intend to go?—Some of them undoubtedly do, but some have taken the course, only because it is a little cheaper than the course at the College, and we fill in so as not to keep the place empty with the overflow from the College.

11705. In addition to the training you give them being especially suitable for the Colonies, you consider it is also suitable for home life in England?—It is.

11706. (*By Mr. Latham.*) On the top of page 4 you say :

Mrs. Hopkins. "Miss May has just been engaged as bailiff on an estate in Suffolk" ?—Yes.

27 June, 1907

11707. Would you kindly explain to us what that means ?—She has taken a good position on an estate there. She was going out to the Colonies, but there were no openings just at the time—there was rather a dearth of posts—and she was obliged to take up work immediately, and she has taken an engagement as bailiff on an estate in Suffolk—I do not know whether she will go out to the Colonies now or not.

11708. (*By Lord Barnard.*) Twenty-two students, you state, have already gone to the Colonies ?—Yes, and I have set out what they are doing. Miss Mary Hewetson was a most promising student. After being eighteen months head gardener in Natal she took up an allotment of her own of 60 acres in Natal and was working splendidly on it, and it was expected by the Natal Government that the work she was doing would be of great value to the Colony, but we regret to record that she died three months after she took up that work. She wrote an extremely valuable report on the openings for women in fruit growing in the Colony, which was published, and of which I put in a copy.

11709. With regard to those of the students who have married, are you aware whether the training that they had has been equally useful to them ?—Yes; for instance, Mrs. Kelly, who was Miss Millar, has done extremely well. She married in the Orange River Colony, and had a dairy and poultry farm. She has written records of the excellence of the training she had; we have had extremely interesting letters from her, proving the value of the training.

11710. In addition to those who have gone to the Colonies, nine more are arranging to go ?—That is so.

11711. You have heard Miss Wilkinson's evidence ?—Yes.

11712. Are your students drawn from the same class ?—They are much the same; usually the daughters of professional men, naval and military officers, farmers and landowners.

11713. The fees are slightly less ?—Yes.

11714. They are £70 a year, or 25s. a week ?—Yes.

11715. As to the openings for women trained in your course, you give a list ?—Yes.

11716. Superintendents of gardens with native labour, head gardeners; settlers of land specially suitable for skilled work on fruit plantations or fruit farms; managers of dairies; managers of poultry; managers of bee farms; matrons of schools or institutions, and "helps" in Canada particularly ?—That is so.

11717. I should like to know how you have drawn up that list.—How did you arrive at it ?—It is drawn up mainly from this synopsis of the students; they have particulars at the College of all of them as they have gone out.

11718. Are you in communication with any organisation in the Colonies ?—We are in communication with nearly all the governments of South Africa now.

11719. You get advice from them, and so on ?—Yes, very much so, and also from Canada we get a good deal of advice. I am on the committee of the South African Colonisation Society, and we get advice from that source, too.

11720. With regard to the question Mr. Latham asked you, will you tell us the way in which Miss May acts as a bailiff on this estate in Suffolk ?—A gentleman has bought a large estate there, and hearing that she was fully trained, especially in agriculture, first at the College and then on a farm at Swanley, he has engaged her as his bailiff. Of course, it was intended that she was to go out to the Colonies, but at that time there were no openings at all, and she has had to earn her living in England.

11721. Is she English-born ?—She is; she is the daughter of a naval man in the merchant service. She has only just taken the post up; she had been working on a farm at Swanley for some time before she took up this post.

11722. A great part of the farmer's business—correct me if I am wrong—consists in the marketing of his produce ?—Yes.

11723. Is a woman such as you have named qualified for doing that kind of work ?—I think she was qualified for everything connected with agriculture, marketing, and so on. Miss Wilkinson will tell you that this lady has lived in a farm house with the farmer's family, and gone to market and done exactly the same work as men.

(*Miss Wilkinson.*) Yes. I should think she is quite unique. She has lived in the farmer's house and has done everything, and gone about just as a man would. She has now gone to a place somewhere near Beccles, but she has been carrying on that work at Swanley for the past two or three years.

11724. (*By Mr. Latham.*) I suppose we may not take it that your ladies who are taught at this College are eligible to take up positions as farm bailiffs ?

(*Miss Wilkinson.*) This one is; I do not think the others are.

(*The Witness.*) It is quite an exceptional case. We very much hoped that she would have gone to South Africa, but there was a great dearth of paying posts at that time, so she did not go.

11725. (*By Lord Barnard.*) Do you consider it desirable that this branch of the work should be extended ?—I think at present it is about the size it should be, but we want certain improvements, in order to make the work more valuable.

11726. Improved buildings, do you mean ?—A colonial house of moderate size, built to suit the requirements which have been found essential to this work, and built close to the College buildings on an available piece of ground, would add enormously to the value and scope of the work, but funds are lacking. Failing this, more small things are required—Miss Wilkinson brings it out more especially—laundry apparatus, text books, and matters of that kind.

11727. As you form part of the original institution practically, may we take it that what Miss Wilkinson has told the Committee includes your department ?—In a large measure, but we should like some special things for this purpose.

11728. (*By Lord Belper.*) Is your Branch of the College entirely independent in its financial arrangements of Swanley College ?—It depends on its own fees, the fees paid by the girls who live in the home; it is independent of the College in that sense, but it is dependent upon it in another sense—that it could not exist without the College.

11729. Are the financial arrangements quite separate from those of the College ?—Quite separate.

11730. You depend, therefore, upon your own fees for supporting this Colonial Branch ?—We do.

11731. Do you get any grants besides the donations that you have mentioned ?—Not except the Bawden Trust, which has been mentioned just now.

11732. You get no grants from the County Council, for instance ?—No. We have had one or two from the City Companies—two, I think—the Clothworkers' and the Skinners'. The Skinners' grant went to the College itself towards improvements helpful to the Colonial Branch; the Clothworkers' to Colonial scholarships.

11733. That is, the Colonial Branch ?—To the Colonial Branch specifically, the Clothworkers' grant.

11734. Your funds are mostly found by voluntary subscriptions. Are they sufficient to carry on the work ?—Now there is a sufficient income to carry on the work; just enough. It simply balances; there is nothing for extensions.

11735. How many students can pass through your Branch together ?—They pass through at different times, in different numbers, because some, perhaps, only take six weeks' domestic course.

11736. Some take short courses and some longer courses ?—Yes.

11737. How many can you deal with at once ?—About 12 can be dealt with in the house at once, but, of course, they pass very rapidly through. There may be a good many in the year, but some only for short courses.

11738. What is your shortest course ?—Six weeks. They learn some cooking at the Colonial Branch, and they go to the College for cheese making, etc., and some of these young married women have written from farms to say that the soft-cheese making they learnt has been invaluable to them and has brought in money at once.

11739. From what class do your students come ?—They are usually the daughters of professional men, naval and military officers, farmers, and landowners—those are the classes.

11740. You take them from all over England ?—We do, and Ireland and Scotland—all over.

11741. Except with regard to the scholarships there is

no local connection; it is not supported in any way by the county, which would enable them to send a certain number of students to your department?—Not at present.

11742. You get no grant from the Board of Agriculture?—No, not specifically.

11743. Does the College get a grant?

(Miss Wilkinson.) We get a grant from the Board of Education.

11744. Not from the Kent County Council?

(Miss Wilkinson.) No.

11745. Practically your Branch of the Swanley College is mainly for giving instruction which may be useful to ladies going out to the Colonies?—That is so.

11746. You do not make it a *sine qua non* that they should be going to the Colonies, do you?—Now we do, especially if they take a scholarship. We always get them to sign a paper which binds them to do so—that they must go out if they take the help we give them.

11747. There are a considerable numbers who do not go?—A certain number; but unfortunately we could not avoid that at the start.

11748. Now you are so satisfied with the excellence of the work, and of the advantage that it is to the Colonies, that you confine your efforts to that?—Yes, in large measure.

11749. I suppose the land on which the students work is at the College itself?—Yes, but they have a little acre-garden, which they manage entirely. They supply the house from it; the students themselves supply the house with the vegetables, and it gives them, so to speak, a little Colonial experience both in poultry keeping, bees, and in vegetables and fruits. They supply the little household with those things, and they cook their own meals, and do all that would need to be done on a small Colonial homestead with a small plot of land attached to it; of course, as near as our experience can teach them.

11750. Do you find there are a considerable number of students who want to come to you?—It varies rather; sometimes there is quite an influx, and we cannot take them, and then again there are not many. It depends very much on the openings there are in the Colonies. If South Africa opens up, as I believe it will, it will lead to an impulse here.

11751. You are not connected with any local educational

bodies who might sometimes find you students who were anxious to take up this sort of work to fit them for posts in the Colonies?—I do not think we can say we are immediately connected with any local body. I think the most immediate connection we have is with the South African Colonisation Society, which in a certain sense meets what you ask. I constantly have enquiries from them, and I have affiliated the Colonial Branch to them, and the President of the Society is satisfied it is a good thing to train the students in this way and to send them out.

11752. One would think a large County Council which had a grant for educational work, if they found there were ladies in their districts who wanted such special teaching, they might be very useful as feeders to you, and you might be very useful to them?—I think that is a very valuable suggestion. We will follow that up. We had not quite thought of that.

11753. Of course, to a large extent agriculture and horticultural education, so far as it is organised, is in the hands of the County Council?—Yes, but we are also affiliated to the British Women's Emigration Society, which manages emigration to Canada. Both those Societies are in close touch with us. They consider the Colonial Branch at Swanley as a training ground, and if there is a great want of these people there they turn to us. But your suggestion is very valuable, and I will pass it on to Miss Kekewich at once.

11754. You have no instruction for men?—No.

11755. It is for women only?—Yes.

11756. (By Mr. Davies.) Have you any Colonial people on your staff?—No; but we have a very strong advisory Council. All the Agents-General for the Colonies are on our advisory Council, and we can go at any time to them, and they will give us advice on any subject. Is that what you mean?

11757. Is it not rather difficult to fit these young ladies with an education to enable them to go out to the Colonies, unless the instructors know exactly from personal experience what sort of thing they will require to know when they get out there?—That is so. Of course, we have had to gather that experience, and anybody who could give lectures or addresses on these subjects whom we could get we have invited to come down to Swanley and give lectures on the subject. We have had a good many lectures given and addresses of that kind, and we have adapted our curriculum to suit those requirements thus set forth to a large extent.

Mr. JAMES MACDONALD, called and examined.

11758. (By Lord Barnard.) You are Secretary to the Highland and Agricultural Society of Scotland?—I am.

11759. I have no doubt you have looked at the terms of reference to this Committee?—Yes.

11760. So that you are fully acquainted with the object which we have in view?—I am.

11761. For how many years have you been Secretary of the Highland and Agricultural Society of Scotland?—Fifteen.

11762. That Society has in the past taken a very active part in promoting agricultural education?—That is so.

11763. Can you tell the Committee at all when the Society first took the matter up?—In 1856 it obtained a Royal Charter to give it special powers in connection with agricultural education, and in 1858 it began its annual examination.

11764. Prior to that time, and indeed subsequently, the Government of the country had really taken no part—I should like to use your own words as they exactly express my views—in directing and stimulating agricultural education?—None before and little or none for a long time afterwards.

11765. Practically your Society was the pioneer to a great extent of that work?—It focussed the movement that was rising through the country at the time and took the action which I have indicated.

11766. Of course the work which your Society did was of necessity of an initiatory and temporary character?—Yes, originally, although it continued a great deal longer than was expected.

11767. You are associated with the Royal Agricultural Society of England?—Yes.

11768. For how many years have you been associated with them?—For many years they worked side by side with us on similar lines but without any connecting link. As the growth of the educational institutions went on, the need for a central body was emphasised, and conferences were held which brought the two national societies into closer association in the work.

11769. The result I suppose you consider has been satisfactory in this way, that it has at last created a public opinion amongst agriculturists which has forced the Government, willingly I might say, of course, to take the matter up?—I think so; it brought out the need for agricultural education.

11770. It showed the need for it?—Yes, and I think it also demonstrated that agricultural education if they took it in hand in the right way could be promoted with great success.

11771. You of course know what has been done by the Government in the last 10 or 20 years?—I do.

11772. You think that the appointment of this Committee is a good omen, as it indicates a wish on the part of the Government to go still deeper and more closely into the question?—I am glad to say we look upon it in that light.

11773. Is it your view that under the circumstances the work of the societies may perhaps in the near future be modified or discontinued?—I should hope that the movement will be in that direction. I think the joining together of the two national societies was a step in the same line. Each Society was doing good in its way, but a stronger central influence was wanted, and it is hoped that we may now retire and let that stronger influence take our place.

Mrs.
Hopkinson.
27 June, 1907

Mr. J.
Macdonald.

Mr. J.
Macdonald.
27 June, 1907

11774. I think you are prepared to indicate to the Committee the considerations and main objects which influenced the Highland and Agricultural Society in taking the steps that led to the establishment of the National Diplomas?—These are just what I have already indicated. While the society was serving its local purposes fairly well it was felt that by itself the Society did not and could not possess sufficient national influence for the work that was ahead, and as it was found that the Government could not be induced to take action, it was thought that the two societies might join with some advantage.

11775. The results aimed at have been almost realised, have they?—The results originally aimed at have been very nearly attained and in much less time than I had anticipated.

11776. You have very carefully considered this question of the National Diploma and I understand that you would like to indicate the changes which are needed in your opinion in the system of granting the National Diploma?—First of all I would like to acknowledge that a change is likely to be needed. Agricultural education is making such rapid progress that I should think it would soon be impossible to draw all the students to one centre. In that sense alone, changes will have to be in contemplation.

11777. You are of opinion that the Council should define the subjects and periods of study qualifying for the diplomas?—Practically so.

11778. And that they should decide as to the teaching institutions to be recognised as entitled to prepare and enter candidates for the diplomas?—That is so; they should recognise colleges that are giving or are likely to give satisfactory courses of instruction.

11779. Do you consider the time has now arrived when the agency of central examinations might be superseded by other means?—I think a beginning should be made very soon in that direction. There are certain colleges that seem to me to have attained such a high position and whose examinations are so satisfactory, or so nearly satisfactory, that so far as these colleges are concerned, the necessity for an independent examination is very nearly gone.

11780. Do you think it would be a desirable thing if all these institutions were thrown together and organised on a national basis?—I do; indeed, I attach more importance to organisation on a national basis than to almost all the other details put together.

11781. So that the work done by one should be really a part of a national system?—That is so.

11782. On the subject of bulletins, I think most of these institutions now publish bulletins, or the results of experiments and so on?—I believe so.

11783. All that work you think might be guided by a central authority?—I do. I dare say I get copies of all these bulletins, and although they are very valuable, I think they would be still more valuable if the work were correlated and the results tabulated by a central body.

11784. You go a good deal about amongst farmers?—I do.

11785. Can you tell me the opinion amongst farmers as to agricultural education?—It is very surprising indeed the change that has come about in the opinions of farmers with regard to agricultural education.

11786. Are you satisfied in your own mind that the practical results have been advantageous to the working farmer?—They have been remarkably advantageous, considering the slender means that have been available for agricultural education. I do not mean to say that the instruction available on the more strictly practical side has been altogether satisfactory, but so far admirable work has been done, and it is to this that I attribute the rapid change in the mind of the farmer.

11787. Anything which would tend to disseminate the information which has been obtained by scientific men among farmers would be of value for practical purposes?—Certainly.

11788. I suppose you would agree with me, speaking for myself, and not for the Committee, that the work of training teachers and scientific men such as agricultural chemists and analysts, and so on, is of great importance as well as having in view the needs of the practical farmer?—Certainly. For the training of teachers there is need for fuller courses of study. I believe all educational institutions feel this want.

11789. I suppose it goes without saying that those en-

gaged in the agricultural industry cannot out of their own resources, in the present state of the industry, provide anything like adequate funds for such purposes?—I do not think there is any chance of the funds being forthcoming locally.

11790. The central and perhaps the local bodies are the only sources to which agriculturists can look?—I think so.

11791. You think they have a very strong case?—I do.

11792. You are, I understand, a Governor of the East of Scotland College?—I am.

11793. You can tell us what the Government do in Scotland for such colleges perhaps?—I have a very bad memory for figures, but I know the Scotch Education Department have been extremely liberal so far as the funds within their reach are available; I believe they have been even ingenious in their efforts to increase the funds. In Scotland they have been getting substantial grants not only out of money ear-marked by Parliament for agricultural education but also out of funds available for general technical education.

11794. Might I ask you whether these colleges and these grants come under the jurisdiction of the Scotch Education Department?—Yes, entirely now.

11795. I am told the grant which each college gets is at least £2,000 a year?—Something thereabout.

11796. The results are very satisfactory, are they not, in one way that you are educating a great many men, and turning them out?—Yes, the results are very satisfactory for the short time the colleges have been in existence.

11797. It is a fact that a great many Englishmen go to them?—A few have always been in the way of coming to Scotland and the number is not decreasing.

11798. It is a fact within my own knowledge that a great many Scotchmen come into England from those colleges, and they are very useful to us here?—Yes.

11799. They supply a demand very largely from those colleges?—Yes.

11800. Have you any suggestion as to the method of examination?—One suggestion I would like to submit is that greater consideration should be given to class records. In a central examination with students drawn away from their own colleges, it is difficult to obtain a proper knowledge of the class work of the students, and this we have all felt to be the main weakness associated with the National Diploma examination. I am bound to say that even at examinations in connection with teaching institutions this point is not receiving the attention that it deserves. I certainly would very gladly welcome any change which would make it possible in granting diplomas in agriculture to take cognisance of class work. In Edinburgh a good beginning has been made in that direction. All the three colleges in Scotland are now working quite on the National Diploma level alike in the instruction and in the examinations. The Edinburgh College has introduced into its Diploma examination this feature, to which I attach great importance, that records of the class work of the students throughout the whole year practically make up half of the marks on which the ultimate results are given. In view of that arrangement special care is taken during the year to keep records of the students' class work, and those are brought to the final examination. In the final examination there is a teacher and an outside examiner sitting together in all the leading subjects, and they not only have the student before them to be questioned, but they also see the records of his class work. I am bound to say the system is giving great satisfaction. At the time the National Diploma was instituted it was hardly possible to introduce any other form of examination than that adopted; but, happily, I think we could now depart from those lines with advantage, and as one of the pioneers of the National Diploma examination I would rejoice in such changes as would admit of fuller recognition of class work and class records.

11801. Some students are much more capable of passing written examinations than others?—There is no doubt about that. Many do much better in the class work than they do in the special examinations.

11802. What are your views as to the multiplicity of degrees and diplomas, and certificates which now exist?—I have taken some part in discussions on that question. I do not object to a moderate number of diplomas so long as they are thoroughly intelligible to the public and their value is well understood, but I do think it is confusing to the public and altogether hurtful to solid education to have a great variety of diplomas and degrees.

Mr. J.
Macdonald.
—
27 June, 1907
—

11803. At the same time anything like standardisation would be very difficult, would it not?—Yes, and on narrow lines it would be objectionable: I would not press for that at all.

11804. With regard to the practical training of these agricultural students would you agree with me, and I think I might say with all the members of the Committee, that it is essential that every man, whether he is going to be a teacher or a practical farmer, should have practical knowledge of farming?—Assuredly.

11805. In the case of Scotch colleges it is almost universal?—Yes, we give no degree without it.

11806. The students at your colleges mostly come from farms, do they?—Not entirely.

11807. Do professional men's sons come?—Yes.

11808. Then they must do work on a farm before they come to you?—Before they can get a diploma they must have done that and they also have to pass a very stiff examination on practical work.

11809. Two of the universities in England have informed us that they propose to conduct a certain amount of research work accompanied by little or no oral teaching: I suppose you agree that is valuable?—I should hardly think it would be advisable to have original research dovetailed into the teaching to any great extent.

11810. (*By Lord Belper.*) You are Secretary of the Highland and Agricultural Society, and I suppose you can tell us in what way your Society has promoted agricultural education to such a large extent. Was it merely by examinations or was it by giving funds, or promoting teaching, or what were the lines you worked on?—Originally it was mainly, apart from examination, by giving grants to such centres as did exist for instruction. For many years the Society gave £150 a year towards the Chair of Agriculture in the University of Edinburgh. I think the actual sum the Society has expended in promoting agricultural education would be about £17,000 to £20,000.

11811. In how many years is that?—That would be spread over more than 50 years.

11812. Are your funds provided by voluntary subscription?—Entirely.

11813. The members of your Society supported the view you took that it was very important for agriculture that a large institution like yours should spend a considerable part of its funds in promoting agricultural education?—That was the general desire of the members.

11814. In that way you have set a very happy example to many other societies which, unfortunately, they have not followed?—I do not know.

11815. I notice you say here that you think the Government is now about to take its proper place in the direction and stimulation of agricultural education, and that, therefore, you assume that the more strictly educational work of the national agricultural societies is nearing its completion?—That is in carrying out strictly educational work.

11816. You would admit, of course, that there is still a large field for you in developing agricultural education, you being in touch with the farmers, and when you have a number of proper institutions for teaching agriculture about you you could do an enormous amount in getting farmers and members of associations in touch with the teaching of those colleges?—That is so, and also in research. Our Society has no desire, as far as I can gather, to lessen its outlays in the educational cause generally, but it is thought the time has come when the Society should more largely devote its aid to research and to assisting and encouraging farmers to make good use of the instruction supplied through the colleges.

11817. Your view would be that any representative agricultural society, if it is to do the work which it is supposed to be doing, ought to spend a considerable amount of its money and time in doing their best to promote agricultural education?—Clearly.

11818. The mere giving of prizes for stock at shows is only the more limited part of the work that such a society ought to take up?—It is only a part at any rate. I suppose there would be a difference of opinion as to the extent to which it should be carried, but still it is only a part.

11818A. I do not want to confine you to the extent but, I think, it is now admitted that agricultural education is so important in farmers' interests that a society which is really an agricultural society ought not to neglect that branch of the work?—There is, I believe, a definite view amongst our members with regard to this. Now that the Government is taking in hand, as it ought to, the direction and maintenance of agricultural education, it

is felt that there should be no need for agricultural societies continuing to contribute funds for teaching, but that they might with advantage apply their help to departments, notably research, not covered by Government grants.

11819. What is very much neglected is local organisation in order to bring farmers in touch with colleges and schools of agriculture which are put within their reach?—Clearly.

11820. A society representing farmers can do that when it is very often difficult for the college to do it themselves?—Our Society has long been endeavouring to do some good work in that direction, and it intends to continue that work.

11821. I am glad we have had the advantage of hearing your views as representing your Society, because it is quite clear you have been in the fore-front in recognising how important it was for the farmers to get the assistance you could give them in promoting agricultural education?—Yes.

11822. (*By Lord Moreton.*) You have been connected since its inception with the National Diploma Board?—I have.

11823. I gather from what you have said that you think the time has come when a change might be made in the conduct of the examination, and in the body organising the examination?—With regard to the latter point my feeling is that the time has come when the body we originally hoped would begin it should take it up; the Societies undertook these examinations only when they did not succeed in inducing the Government to do it.

11824. You would approve, if possible, of the examination being held at various centres instead of at one centre I take it?—I would.

11825. Do you think that the two societies who now conduct the examination could possibly find the money that would be necessary to multiply the places of examination?—I think that is very doubtful.

11826. In other words, I may take it you think if the examination is to be taken into various localities it must be done by the Government; that it is impossible to hope that the two Societies could possibly manage to do it themselves?—I do not think they would be disposed to do it.

11827. All your evidence here has been with regard to the examination in agriculture?—Yes.

11828. Do you wish to say anything to the Committee as regards the examination in dairying?—I do not think there is anything special. The dairying examination began before the agricultural examination, and education in dairying is in a more advanced condition throughout the country, so advanced, indeed, that in Scotland we feel that the National Diploma has done its work completely.

11829. When you say done its work completely, do you mean it has done its work so well that there is no future need of such an examination?—What I mean is that the colleges, accepting the inspiration of the National Dairy Diploma movement, are now working on the lines of it, and our Society feel that there is little use in spending money in duplicating what the colleges are doing, or, I believe, are about to do, themselves.

11830. I take it that if the Government, or the Board of Agriculture, saw fit to step forward and take the lead in the diploma work you would see no objection to their confining the colleges to what is called the agricultural diploma, and leave the dairy part as it was before the examination was instituted?—I would hope that the Government would take the dairy work under its supervision and care as well as the agricultural work.

11831. (*By Mr. Latham.*) Would you be willing to give us some little information as to what the education in Scotland generally is?—There are the three Colleges in Scotland, in Edinburgh, Glasgow, and Aberdeen, and at each there is a three years' course in agriculture, on all fours with the syllabus of the National Diploma in Agriculture. Each college has in addition a considerable staff for provincial work, giving lectures in agriculture, and the sciences relating to agriculture, in different districts. A great deal of work has been done during the past few years in that direction, and that has helped greatly to interest farmers, and to bring about that better reception that farmers generally are giving to the work of the colleges.

11832. When you first began you said there was a very great change in the way in which science was being received by farmers in Scotland?—Yes.

11833. Have you any farms attached to these centres?—There are no farms held by the Scottish Colleges. In the West of Scotland there is a farm leased by the college, but it is sub-let to another farmer, and only a limited area

Mr. J.
Macdonald.
—
27 June, 1907
—

retained for experiments. It is a point as to which there is a difference of opinion in Scotland, the having of a college farm. They regard it as of great advantage for a student to have access to a farm, but many of the governors of the colleges are shy about undertaking the responsibility of a farm, largely in view of the difficulty of making a college farm a direct financial success.

11834. Is there not another view, that Scotch farmers feel they know more about practical agriculture than the colleges do?—That is a feeling which I am glad to say is breaking down a little.

11835. How are these young men prepared before they have the opportunity of going to the colleges?—Just a very good general education, mostly at the parish schools; some at a central school.

11836. May the parish schools be described as elementary schools?—Of course they do the elementary work, but a large number of them in Scotland carry the pupils right up to the University.

11837. At these elementary schools you have advanced classes that carry your students right to the University without the aid of secondary schools?—Many of them, not all through, but in many parts of the country.

11838. I suppose it is fair to ask you, is that a very beneficial way of giving teaching?—Very beneficial, I think.

11839. It almost does away with the idea of the secondary school?—At any rate it gives to out-of-the-way districts the advantages of a central school that they could not afford otherwise.

11840. Is this education principally given by national aid or by the rates?—It is altogether under the Education Act of 1872 and subsequent amending Acts.

11841. You have no way of improving your farm stock in Scotland by any outside aid, have you?—Education has taken little part in that yet; that is left to the operation of societies. In some cases breed societies have been specially organised for that purpose.

11842. Are you aware of what is being carried on in Ireland in that respect at present?—I know what is being done in Ireland. I had the management of some of the breeding schemes there. We have nothing corresponding to that in Scotland.

11843. What is your opinion with regard to that?—On certain lines it is entirely advantageous, but on certain other lines I am doubtful. If worked entirely through shows I am not sure that it would always be advantageous, but when it is directed by breeding organisations, special attention being given to the selection of breeding animals, it is of great advantage.

11844. I suppose it is really a more certain and a more thorough examination as regards sire animals than that carried on anywhere else?—They have carried it out very thoroughly in Ireland, there is no doubt about that.

11845. Do you not think as a practical man that that is a thing to be very widely recommended?—Yes.

11846. You would like to see something of the sort going on in Scotland?—I should be very pleased to; I think it would be very advantageous indeed.

11847. Do you think the Scotch farmers would welcome anything of the sort?—I am sure they would.

11848. Is there anything done in Scotland to educate the labourer?—I do not think there are any organised classes for training or instructing young farm labourers in any methods of their work. I think that is just left to their fathers or their masters, and I do not think it is very badly neglected.

11849. When I heard you were coming here I meant to ask you particularly that question. The farmers in Scotland are good enough men, and masters of their business, to be able to instruct the men themselves?—I think so.

11850. And very much so in the case of the sons?—Yes, and in many cases the servants are just as capable as the masters.

11851. (*By Professor Middleton.*) You told us, speaking about the practical teaching of agriculture that the instruction from the practical point of view was not satisfactory at the present time. I entirely agree with you. I have been a teacher of practical agriculture for 20 years, and I consider it quite unsatisfactory. I should like you to

explain, however, just a little more what you have in view with regard to that?—One would like a little more of it for one thing.

11852. Might I put it in this way: you will agree with me, I think, that the practical farmer is a specialist—he takes up certain departments of agriculture. Did you ever see a farmer who took up all the branches of agriculture and made a success of it?—Very few indeed.

11853. Did you ever know of a professor who was not supposed to teach all the branches of Agriculture?—I have not met very many who really pretended that they knew all the branches.

11854. Just so, but they are supposed to. Do you think agricultural teaching will ever be quite satisfactory until the teachers specialise in each branch of it?—Quite so—on the American system, where they specialise in each subject.

11855. Exactly. They divide the subject of agriculture up into its natural groups, and each man who takes up a group is a specialist in that particular line—the live-stock man is a specialist in live stock; the man who takes crop growing is a specialist in crops, and so on?—That is so.

11856. Your feeling is that our teachers are unsatisfactory because they distribute their energies all over the subject?—Yes, but of course they are required to do it, and at the same time, I am bound to say many of them have done remarkably good work.

11857. You have further indicated that our system of training teachers is not satisfactory. May I say I agree with you again, but I should like you, if you will, to amplify that a little?—Well, there is no system really; it has not begun. There is no pretence to system yet. We have heard it discussed whether the National Diploma is intended to train teachers or farmers. I do not think we have attempted anything in the direction of special training for teachers yet, I am sorry to say.

11858. Have you any idea of the type of training you would give in order to prepare the teacher. I do not know whether you have given any thought to that subject?—I would prefer the man who had an inclination to it from youth, and who has had a familiarity with it in youth, but I would not adhere strictly to that limit.

11859. You have expressed another opinion which I am afraid I do not agree with. You said that original research and teaching should not be dove-tailed together; that we ought to keep them separate?—Yes; in a certain sense and to a certain extent that is my opinion.

1 860. Is that your opinion of the subject in general, or does it apply only to certain grades of education?—It applies to this, that I would distinguish between the work of a teacher in imparting instruction and his work in carrying out research. Might I mention an incident that occurred about twenty years ago in connection with this question of the relation of research to teaching. Some of us had become enamoured of a scheme for the founding of a great College of Agriculture, near Rothamsted, so that the students might have easy access to the famous Experiment Station there. It fell to me to ask the opinion of Sir John Bennet Lawes on the project, and in giving an opinion which put an end to the scheme, he stated that he was so strongly impressed with the danger of submitting unfinished original research to students that he thought of providing that students as students should not be admitted to Rothamsted.

11861. Do you not think in the higher departments of education at the colleges that we ought to require teachers themselves to be engaged in some forms of research?—I say there ought to be scope for research in connection with each college, but that should be for the purpose of gaining knowledge.

11862. Do you think the teachers would remain satisfactory if they were not carrying out research work?—I do not think they would, but I do not regard research as teaching; teaching is the dissemination of known facts, research is the seeking for new. I would leave it to the teacher to exercise his most careful discretion in explaining to the students the results of his research year by year as it proceeds. I am here, of course, speaking of original research as distinguished from demonstration experiments. The latter are essential in teaching.

11863. Your point is that where there is a teacher himself who is conducting research work that he should only teach his students well-ascertained facts?—Quite so; that is my point exactly.

11864. I have been in Austria and Germany recently,

and I tried to ascertain the feeling in those two countries on this particular subject, almost the universal opinion is that unless a teacher continues doing research work he becomes useless?—I quite agree.

11865. I see the conviction has been forced upon you that a central examination is after all not satisfactory?—No new conviction has been forced upon me; I had a very clear understanding with regard to that from the very beginning, but nothing else was practicable then.

11866. The central examination was instituted, was it not, for the purposes of what I might call organisation?—Yes, to assist organisation; to assist different bodies to work into a system, and to set up ideals which might, or might not, be the best possible, but might be tried—particularly to encourage the institutions to work to a system.

11867. You have been of opinion all along that the holding of a single examination is a disadvantage as compared with two examinations, one in the North, and one in the South?—Decidedly, and we did not think the system of one central examination would have gone on so long as it has done.

11868. You have expressed the opinion that a multiplicity of diplomas and degrees is undesirable—a multiplicity of letters?—Yes.

11869. Of course, in a certain sense everyone agrees with that, but do you not agree, that if there is any responsible institution which is charged with the teaching and the training of young men, that that responsible institution ought to have the right to give a diploma?—Entirely. All my remark applied to was this: that whatever examinations were held at the colleges, and whatever diplomas or degrees were given, they should be so adjusted in relation to others that there would be a general understanding of the value of each single degree. Take the B.Sc. in the various Universities, its value is very well known everywhere, and my suggestion was that the degrees in agriculture should follow such a line as that.

11870. When a University, or any other examining body sets up a degree there is no standard at first, and the different Universities find their level?—That might be so at the outset.

11871. The tendency in Universities is always to keep the level as high as possible?—Yes.

11872. It is the policy of all bodies of that sort to keep the examinations for the degrees as stiff as they can?—Yes, as a rule it is.

11873. Do you not agree that the same sort of thing is likely to happen with diplomas as with degrees—to begin with, there may be inequality, but it is the interest of the college to keep up the standard?—Yes, and I would merely direct national influence to the minimum and allow colleges to go as high as they can. Take the case of the General Medical Council and their attitude towards the schools of medicine. The object of their periodical visits to the Universities is to see that the minimum is as it ought to be. I would follow that line exactly in regard to agricultural schools. The maximum may be left to take care of itself.

11874. In one of your specific recommendations here, No. 5, you say, "The suggested Council would lay down regulations for conducting the examinations in these recognised institutions for the diplomas, the Council having the power to have present assessors or examiners." Would you not have some fear that that would be resented by the institutions concerned?—The General Medical Council laid down the lines of the course of study for the medical degree, or at least have a voice in the matter, and that is not resented by the Universities.

11875. That is a little different from agriculture; medicine is a close profession whose interests are looked after by the General Medical Council very keenly?—I should be very glad if we could apply something similar to agriculture.

11876. Your idea is that we should have a National Agricultural Council similar to the General Medical Council?—Yes, but not with such extraordinary powers I admit. I should like to see an Agricultural Council which would foster agricultural education in a suggestive way rather than by forcing it; the more suggestive it is, and the less forcing, the better it would be.

11877. You know how much governors of colleges are apt to resent outside suggestions when the suggestions are a little too strong?—Yes, I quite appreciate that.

11878. You have come to the conclusion that the

National Diploma in Dairying is no longer needed?—No, I did not quite mean that; I want to see something else in its place before it is discontinued.

11879. I understood you to say that the colleges in Scotland had got their own diplomas?—The matter is under consideration at present, but unless the proposed college examination is found to be satisfactory the National Diploma cannot be dropped.

11880. I understood you to say that we had already arrived at a stage at which you thought we could drop the National Diploma?—I hope I did not give the idea that I thought the National could be dropped before a substitute was found for it.

11881. As regards the National Diploma in Agriculture I see your idea is that, so far as possible, we ought to drop independent examination?—So far as possible we ought to take up examinations in closer touch with the leading colleges, and, of course, if the dropping of the large central examination is incidental to that, then let it go; but I am not sure that there would not still be a demand from the smaller institutions for an independent examination also.

11882. Just in the same way as the General Medical Council do, you would have this proposed National Agricultural Council to accept the diplomas of colleges?—Certainly, that has been my idea from the beginning; it would never be satisfactory unless it did.

11883. I am glad to hear you lay stress on the necessity for ascertaining the results of what the student has done in his class work?—Yes, we have found that a great advantage in Scotland.

11884. That is the objection really to a single examination?—It is an objection to all examinations when class records are not considered. Unfortunately Universities still disregard class records in degree examinations.

11885. (*By Mr. Medd.*) Am I to understand that, with the exception of the Colleges at Aberdeen and Edinburgh and Glasgow, there is no organised agricultural education in Scotland?—None, except what is in one way or another associated with one or other of these colleges.

11886. Of what may that be said to consist taking the country as a whole—lectures?—Each college has its own staff of provincial lecturers.

11887. I know, but I meant in regard to other localities?—Scotland has three colleges. Each of those colleges has its own number of counties associated with it, and it is responsible for the work in those various counties.

11888. At the present moment you have no permanent institution for intermediate agricultural education, subsidiary, of course, to the College?—They are just making a beginning in that work.

11889. In the Dick Bequest Schools under your present code has anything been done of an agricultural character?—Nothing more than nature knowledge classes.

11890. Not even with the older students?—No.

11891. Nor in your supplementary courses?—No; only nature knowledge.

11892. In the supplementary courses very excellent suggestions appear in the volume of circular letters?—That is so. In Edinburgh we have before us now suggestions as to the assistance which the colleges could give in providing teachers to visit district schools, and take up instruction suited for advanced boys and girls.

11893. Because you might have a really practical supplementary course?—That is so.

11894. Does the same remark apply to higher elementary schools—higher grade, I think you call them?—Yes, that is so.

11895. Nothing of a definite nature however has been done at present?—Nothing practical.

11896. Are you familiar with the organisation of the Duchess of Sutherland's school?—I know something of it.

11897. Have you been there?—No.

11898. You are not able to form an opinion whether schools of that type are applicable at all to the conditions of English rural life?—I would not like to offer an opinion.

11899. The school is, of course, purely in an experimental stage at present: it has hardly had time to justify itself apart from questions as to its organisation?—Quite so.

11900. You have nothing in the nature of permanent winter schools?—Nothing beyond what I have already mentioned.

11901. Nothing beyond the winter classes at these three

Mr. J.
Macdonald.
—
27 June, 1907
—

Mr. J. Macdonald. colleges?—Nothing beyond classes in or in connection with these colleges.

27 June, 1907 11902. Exactly, but what I mean was permanent winter schools established in particular localities for a period of five or six months?—We have nothing of that kind yet, but we hope to have.

11903. (*By Mr. Davies.*) I think you told the Committee that the Department of Agriculture in connection with the University of Edinburgh was doing very good work, and what I should like to ask you in that connection is do you consider it advisable that agricultural colleges should be dumped down in country places without any educational surroundings, and without being part and parcel of a University, or do you think that they should be part and parcel of a University?—I think from experience we have gained great advantage from having the colleges in near touch with Universities. It is an advantage to the students. That system is a much better one than the system of isolated agricultural colleges.

11904. So that with regard to any new agricultural colleges which were to be established in future in the country, if you had anything to do with it you would always advise that they should be affiliated, or be as near as possible to a university centre?—Certainly, if the University is there.

11905. (*By Lord Barnard.*) I have before me a list of the gentlemen engaged in teaching at a certain college, and I see some of them have the ordinary degrees, M.A. and B.Sc., and two of them have F.H.A.S.?—Yes, those are the letters that the Highland and Agricultural Society allowed holders of its Diploma to use. It means Fellow of the Highland and Agricultural Society.

11906. What conferred the right to use that title?—It was, I may say, a very stiff examination; it was the forerunner of the National Diploma on the Scotch side, and it corresponded to M.R.A.S.E.

11907. Those letters indicate some real test of qualification?—Quite so.

11908. I believe as a whole the people at the schools in Scotland all get a very good general education, do they not?—They have very good schools indeed in most parts of the country.

11909. They are probably better off than this country in the way of public schools?—There are certain parts of Scotland which are decidedly inferior to the rest in that respect. A particularly high-class elementary and general education is provided, especially in the North Eastern Counties where the Dick and other valuable bequests have been in operation for nearly a hundred years.

11910. (*By Professor Middleton.*) Every schoolmaster had to be a Master of Arts in the Dick district, I think?—Yes, and right away in the heart of the hills, you would have a Master of Arts at one of these schools who was quite capable of carrying a boy right up to the University.

11911. (*By Lord Barnard.*) Do county councils, or local authorities, do anything in the way of either aiding or stimulating or providing agricultural instruction in Scotland?—They provide half the funds for the colleges at present out of the funds at their disposal—practically one half.

11912. Do they subsidise any other institutions as they do in England?—They did that before the colleges were instituted, but now almost all their work is carried out in connection with the colleges. They work with the colleges very loyally indeed.

11913. Is it the practice in Scotland for young men to be sent as pupils to farms—do practical farmers take pupils?—Yes, farmers take farm pupils very largely in Scotland. These pupils are generally lads who have come from other lines of life. Where a professional or commercial man has been desirous of sending his son into farming, he has very often taken the course of sending his son for a period to live with a good farmer and practice under him.

11914. If that system is properly carried out the system is a satisfactory one?—Very satisfactory indeed.

Mr. Wm. H. DUNN, called and examined.

Mr. W. H. Dunn. 11915. (*By Lord Barnard.*) I think you are the Chairman of the Berkshire County Council?—I am.

11916. You were at one time Vice-Chairman of the Education Committee of that Council?—Yes, and am now. I was Chairman of the Higher Education Committee, that is more nearly the thing we have to deal with. In our county it is separated into two parts, the elementary and the higher education. I was Chairman of the Higher Education Committee, but I have given that up since I have been Chairman of the County Council, and am now Vice-Chairman of the Committee for Higher Education.

11917. Your county is almost entirely an agricultural county?—Quite.

11918. May I take it for granted that your County Council wish to do anything they can to promote the prosperity of the agricultural interest?—Certainly.

11919. But in spite of any good wishes or intentions they may have in that direction I think I am right in saying the evidence this Committee has had at present is that there has been a decrease in the expenditure for the purposes of agricultural education?—A very large one, certainly.

11920. It would be interesting to the Committee to hear from you the cause of that?—I wrote a letter some 10 days ago to the Secretary of this Committee and I do not know that I can supplement very much what I said in that letter. At present we have to meet compulsory calls on us by the Board of Education in the way of pupil teachers' centres, and various calls of that kind amounting roughly to something like £2,000 a year, which of course we had not in the former days before this new Education Bill came in in 1902. So that that makes a difference in round figures of £2,000 a year to us. I have a statement here that was drawn up by the Clerk to the County Council as to what the position was in the old days when the Technical Education Committee was in force. For instance, take the first year of which I have a memorandum here, 1894, that is 13 years ago, the University College at Reading, the Agricultural Department got £200—I am leaving out the shillings and pence—the Dairy School got £553, Berkshire Bee Keepers' Association £50, Farriery School £442, and

scholarships which were in the main intended for agriculture in those days amounted to £881, making a total of £2,127; that was in 1894. Then in 1896—I will give you the total unless you wish for the items separately?—

11921. No.—In 1896 the total was £1,719; in 1897, £1,353; in 1898, £1,199; in 1899 it came out at £777; in 1900, £815; in 1901, £775; in 1902, £780; and in 1903, £687. All that we really ought to give now in the way of agricultural education we have not got the money for, and to meet the calls upon us for the first time in our estimates this year, for the coming year ending in March, 1908, we have levied a rate for higher education; this is the first time we have ever done that.

11922. Did that meet with any opposition?—No, I thought it would have, but it did not. I may say it is only a small rate, a halfpenny rate, and it amounts to about £2,300 a year, which is just what we wanted. It just covers what we wanted. I will hand you this list. Those that I have marked in red ink are the estimates for next year, and I do not think you will find, if you look at the items which make up the sums, that there is anything for what you can really call agricultural education there—I think it comes to very close on £2,000—I mean the King's scholarship classes, pupil teachers' centres, teaching exhibitions, and all those things we have got to meet, and there is not one penny of that does us any good from an agricultural point of view, I am sorry to say, but we have got to do it. I have kicked against it very much, but it is perfectly impossible; you have got to do it, and there is an end of the matter.

11923. Those are statutory obligations?—Yes, those are obligatory upon us; the Board of Education say we have got to do it, and we cannot help ourselves. We had horticultural classes at one time; they were of very small expense comparatively, but I do not think they were of any very great service.

11924. This Committee must take it from you that it is absolutely impossible for your Committee to do anything more for agricultural education out of the funds at the disposal of the county?—Certainly.

11925. It is not a question of willingness at all, it is a

Mr. W. H.
Dunn.
—
27 June, 1907
—

question of lack of funds?—I can only answer for my own county, and we would be very glad to do it, because we are all interested in land; we are all more or less unfortunate landowners there, and it more or less concerns us, and we naturally would do anything we could to benefit the land and raise the standard of agricultural education. There is not a manufacturing town in the county, except perhaps Reading, Huntley & Palmer's place, which does not help us much except in the way of taking milk. However, we have nothing to do with Reading, so that there is no other industry in the whole county but agriculture.

11926. Has the subject been discussed at your committee meetings?—Yes, over and over again, to see if we can do anything.

11927. Have you ever expressed an opinion that something should be done, and to see if funds could be provided?—We are ready to do it, but it is cut down so close; in fact, there was a question the other day as to some farriery classes, and it was advocated very strongly, but we said, "What can we do, we have not got the money; we are pressed now for scholarship classes under the education scheme, and we cannot give to both; we have got to do one, we have got to do what we are driven to do."

11928. Are you establishing secondary schools all over the county?—Yes, wherever we can; we have established one. There is one at Newbury, which we subsidise, and there is a school at Maidenhead which got into very low water; we practically had to take that over and run it ourselves. We are shortly going to apply for a loan to establish a school at Windsor; we are running secondary schools at Wallingford, Wantage and Abingdon. That is as far as the boys are concerned; I am talking of boys' schools now. We have started a secondary school for girls at Newbury and another at Maidenhead.

11929. (By Mr. Latham.) The Wallingford School is the old Grammar School?—Yes, but we are running it now; it was absolutely "broke," and they said they would have to shut up entirely; they came to us and we took it over, but it is in debt now although it has been running for three years.

11930. (By Lord Barnard.) Is it more economical for the county to put the existing schools on a sound basis than to start new ones?—Yes, it is more economical to the county if the teaching is good enough in the old ones to meet the requirements of the present day.

11931. You can make them Council schools?—Yes, but that necessitates a considerable loan.

11932. I do not know whether you have seen the reference to this Committee?—Yes.

11933. I do not suppose we shall report county by county, but I take it if we did we could hardly say that the provision of agricultural education in Berkshire is sufficient?—Most certainly not.

11934. We could not say that it would be supplemented from the resources of the County Council, that is quite clear?—Quite clear.

11935. And I am sure you will agree with me that you cannot look to landowners or to farmers like Mr. Latham to put their hands very deeply into their pockets for such a purpose?—Certainly not.

11936. Possibly public benefactors may come along, but you cannot wait for those, so that really and truly the only source to which we can go is the Treasury?—That is all—at least as far as I can see.

11937. You agree with me that the National Exchequer is the only way by which, to take a county like Berkshire, the existing provision can be supplemented and made satisfactory?—I fully agree.

11938. There is no prospect, is there, I will not say even in the immediate future, but as far as you can see in the future, of your Council having some funds at its disposal so that it can again bring the grants for this purpose up to the level at which they were?—I do not see a chance of it; we are driven, as I said just now, by the Board of Education, and we have more applications now to start other secondary schools in the county, and we have to say we cannot do it; we cannot do anything.

11939. Does your Education Committee have an Agricultural sub-committee or any special committee?—No; but it was in the scheme included in the Bill, and it was adapted to suit our county. Our Education Committee consists of 31 members, and one of them was especially to

be appointed in the agricultural interest. At the present moment Mr. Childs, the Principal of Reading College, is on the Education Committee, and he fights for his own hand as well as he can, but he sees the difficulty of it himself.

11940. You do subsidise Reading College?—We give them £400 in a lump sum, but I cannot tell you how it is spent.

11941. (By Mr. Latham.) That is not earmarked?—That is not earmarked at all, and it was only last Saturday at a meeting of the Committee we were saying that to Mr. Childs.

11942. (By Lord Barnard.) You are represented on the governing body of the College?—Yes.

11943. So that you can ascertain from your own representatives what is being done by the College?—We can ascertain, but I do not think any one of our representatives on the governing body can tell us exactly where our £400 goes to. I know those on the governing body well—I was on it myself, but I had not time to go on with it, and I had to give it up—and I could not tell you where the £400 goes, beyond that it is given in a lump sum.

11944. You do not question that the College is doing good work?—Not at all; it is doing very good work—very good work indeed.

11945. Would you kindly tell me whether you have a special committee on your County Council—I know you must have a special committee under the Act—or whether you delegate the duties to be performed under the Diseases of Animals Act to some existing committee?—They have a special committee of their own who do nothing else; they have powers delegated to them to act, and if they get a telegram, for instance, notifying them of a disease they have to attend to it at once. I may say they got one only the other day.

11946. Does the Fertilisers Act come under the same committee?—That is the Weights and Measures I understand. I am not on either of them.

11947. It has been suggested to us by a witness of great experience that all agricultural matters, including agricultural education, might with advantage be dealt with by one committee of the County Council. Do you think such a thing would be practicable?—If you are going to make one committee you would have to enlarge that committee very considerably.

11948. Possibly you would have to have outside co-opted members?—Yes.

11949. I do not know whether you have thought of that subject?—No, I cannot say that I have. I know they have one in Wiltshire. I happen to know the chairman very well, and I know they have got one there.

11950. Yes, we have heard about that?—Yes.

11951. (By Lord Moreton.) In these secondary schools that you are running, have you in any case started the teaching of agriculture there?—No.

11952. You have not got an agricultural side to them?—No.

11953. (By Mr. Latham.) When we began in 1904 and gave £2,000 for the benefit of agriculture, there was really nothing else for that money to be allocated to, was there?—No.

11954. The Act of 1902 has robbed agriculture of a very large sum?—Undoubtedly, and we are doing now what we are driven to do. In 1894 we had a sum of money put into our hands, and we were told to use it in the best way we could in the county for technical education as it was called. We were told to find out practically what was the technical education best suited to the needs of the county, but now we have got a sum put into our hands, and we are told by the Board of Education: you have got to do this and you have got to do that, and the thing is swamped up at once.

11955. You know better than I do that the agricultural interest pays a large proportion of the rates in Berkshire?—Yes.

11956. This small amount of money, £450, which you give to Reading?—It was £450, but it is only £400 in the estimates for next year.

11958. That is a very small sum considering the amount of rates the agriculturists pay in the county. So that really the towns are reaping a great deal more benefit from the "whisky money" than the agriculturists are?—Yes.

11959. The secondary schools you have started—I

Mr. W. H.
Dunn.
—
27 June, 1907
—

know they are very small at the present time in number—have no agricultural side to them and no teaching of agriculture whatever, and possibly they are of no direct benefit to agriculture?—I do not think at any of the schools in Berkshire that the teaching directly benefits agriculture. They all seem to me, as far as I can make out, to be pushing the boys from the secondary schools to the Universities, and to be ignoring the question of agriculture altogether.

11960. We may take it that the £400 you give to the College at Reading is not earmarked particularly for any purpose?—No.

11961. That is the whole amount from the “whisky money” that goes to the benefit of agriculture at all?—That is all.

11962. I know myself pretty well how it is allocated. I dare say you will agree with me that it is a serious loss to the agricultural community that you have been obliged to take something like £1,600 away from agricultural education?—Undoubtedly.

11963. Having read the reference to us, I feel confident you would welcome very much some augmentation of the money at the disposal of your Committee for the purpose of benefiting agriculture?—Undoubtedly we would; we are so closely bound up in the question of agriculture that we would do all we could to further it.

11964. With regard to some of the work that has been taken in hand, the dairy school was very successful?—Very.

11965. The farriery especially so?—Yes; I may say we had the peripatetic dairy school going for some considerable time, and we gave it up at last, because we thought we had pretty well worked the county out. We stopped it for two or three years, and then when we wanted to start it again we had not got the money, because in the meantime this new Bill came along, and the money we wanted for the dairy school was swamped for the elementary and other schools in the county.

11966. The same thing applies to the farriery school?—Exactly the same.

11967. You are willing to admit there was a very good and valuable work done in the farriery school, are you not?—Very good indeed.

11968. The diminution in the amount of money you have at your disposal has been a very serious loss to agriculture, and you would welcome any augmentation of it in the county?—Very much so.

11969. With regard to the elementary schools, are there any scholarships attached to them?—Yes, both senior and junior, and teaching exhibitions too.

11970. Where are they allocated to?—You mean the secondary school to which they move from the elementary?

11971. I want to know where the students go to if they win a scholarship?—They go to some of the secondary schools in the county—to Newbury, Reading, Wallingford, Wantage, Maidenhead and Abingdon. The scholarship pupils go to any one of the secondary schools in the county, either boys or girls.

11972. With regard to the secondary schools in Berkshire, are there any scholarships given there to raise them up to Reading College?—No, none earmarked for Reading, because if you took a scholarship from an elementary school, Reading College would take the place then of a secondary school.

11973. You do not quite understand. When we were on our old Education Committee we used to give farmers' sons an opportunity of going to a special school?—Yes.

11974. Is there anything to correspond with that in the county now?—No; a boy or girl gets a scholarship, and if they live near Reading and the parents wish them to go to Reading and take the course of classes there they can do it, but there is nothing especial for farmers' sons or relations to go to.

11975. At the present moment are there any scholarships by which students from the secondary schools can go to Reading or anywhere?—Yes.

11976. That rather alters the aspect of affairs, because if you give Reading £400 a year, if the scholarships were taken up, it would be a certain amount of additional money that was allocated to agriculture. How many go to Reading?—It is a very small number that go to Reading. They go to Reading, but they do not all go as agricultural pupils there. I do not say that one or two may not, but the majority do not.

11977. We have virtually lost all our agricultural

scholarships?—Yes, we have lost those. We used to earmark those in former days for agricultural scholarships, but now we give a lump sum and ask Reading College if they will let us know annually how that money, or the bulk of it, is spent. We have had one or two statements from them, but we have not got any nearer to finding out yet, and we have not any idea how it is spent.

11978. There is nothing else whatever, I take it, for the benefit of agriculture?—No. I think you may take it there is nothing more than that £400 a year.

11979. (By Mr. Medd.) Can you kindly explain why agriculture is treated so differently in Berkshire from Cambridgeshire; I may mention the figures to you. Cambridge, out of the whisky money, gets £3,824, and allocates £1,045 to agriculture. Berkshire gets £5,729, and allocates £400. That is £2,000 more than Cambridgeshire, and yet it only allocates £400 to agriculture. Why should there be that startling difference?—I think one reason that will account for it is that we had practically, with one or two exceptions, the old-fashioned grammar schools. We had about five secondary schools, and certainly not one for girls. The County Council started the first one at Newbury for girls. I have often heard from the parents of girls myself, “There is nowhere where I can send my girl to.” We had some scholarships—Mr. Latham will remember this—for girls, as we have now, but we had not a single school in the county to send them to, and we had to send our girls out of the county to utilise our scholarships in another county.

11980. Cambridgeshire has been called upon to find very large sums to establish its county school for boys and its county school for girls, in both of which the interests of agriculture are specially considered, so that there ought not to be, so far as I can see from your evidence, any reason why the agriculturist in Berkshire should be placed at such a disadvantage as compared with the one in Cambridgeshire, because you are essentially agricultural, are you not?—Yes.

11981. I believe your labourer is not entirely satisfactory, is he?—I do not know that they are any worse than others. They are mostly on the grumble, I think, everywhere.

11982. Is it not the fact, especially in the neighbourhood of Newbury, that you import northern labour?—I do not think it is very largely done: it was much more general years ago: I do not think it is much done now.

11983. You used to import Yorkshire and Northumberland labour, and the interesting fact about it was that in some five years' time or so the imported labour sank to the level of the local labour?—I do not think they import labour now. There has never been any imported in my district. They used to import Irish labour some years ago, but you never see an Irishman about the place now.

11984. The Irishman would probably be paid at the local rate. You do nothing for the training of elementary teachers in rural subjects, do you?—Not in rural subjects, beyond what we do in the nature study classes in the elementary schools.

11985. You have those?—Yes: it is an optional matter for the teachers to take up in the schools.

11986. I mean rather in the training of the teacher to qualify him to take those subjects. You do not make any provision for that, do you?—Not specially.

11987. Do you not think you might earmark a portion of your grant to Reading for the special purpose of training a certain number of your teachers in these rural subjects. You see from your statement here and from your evidence the whole of the money your County Council allocates to agriculture goes to Reading?—Yes.

11988. Do you not think that you might suggest the earmarking a portion of that for the training of your Berkshire teachers in rural subjects?—I think they would say; “You must give us so much more to do it,” because they grumble enough at the smallness of the grant. I think the answer we would get would be that they cannot do it with the existing grant.

11989. Naturally they want as much money as they can handle?—Of course.

11990. I think in making the grant for the next year you might attach such a condition as this; “On consideration of our allotting the whole of our agricultural money to you, you must undertake to allow 15 to 20 of our teachers, whom we will nominate, to attend your teachers' classes.”—You would probably get very large classes, and, on the other hand, the expense does not stop there, because these teachers come from different parts of the county, and they would not pay their own fares. We have to pay the

Mr. W. H.
Dunn.

27 June, 1907

fares of many of our scholars now: the question of railway fares runs into a very, very large sum indeed in the county, and we should have to do that plus the £400.

11991. Your amount of the "whisky money" is not inconsiderable. It compares very favourably with counties that do a great deal more, and I was only endeavouring to suggest ways in which you could, without incurring any large expenditure, do something more for agriculture?—May I mention, taking last year, for instance, up to March, with regard to our secondary schools that Lord Moreton asked about—this Newbury girls' school, for instance, where they can take our scholarships from the elementary schools—the estimate for that school alone is £1,450. Then there is the one at Maidenhead, which is a smaller one. It is a very flourishing one at Newbury, but we have only adapted buildings to it for the time, we have not built a school there.

11992. That £1,400 is for maintenance?—Yes, all these sums are for maintenance. Maidenhead is £620, and there are urban classes that we give, that runs away with over £2,000, and of course there is a certain amount of teaching in that that might come under the head you mean.

11993. It may be that you in Berkshire are considering the urban interests of your county to the almost entire exclusion of the rural interests. That is to say, when you compare Berkshire with the counties of corresponding constitution. Of course I do not know, because I do not live in Berkshire, but that is what suggests itself to me?—I see the point you mean.

11994. You may have upon your County Council a preponderating urban interest?—I do not think we have.

11995. And consequently these large sums annually allocated to the maintenance of schools wholly unconnected with agriculture, and the very small amount which goes to one institution at Reading implies that otherwise you neglect the agricultural industry altogether?—You see, we have these evening classes. They are a matter of about £400 or £500 a year. We endeavour to keep them going, but they drop out very much. It depends a very great deal on the teacher there. Sometimes they take them up very warmly at first, and then when they have been started, and a certain amount of money has been expended, they drop out, and it is rather heartbreaking work to keep them up.

11996. Do you think your County Council would object to submitting a scheme annually to the Board of Agriculture, indicating how you intended to provide for agriculture during the coming year, for advice and suggestions so as to systematise and organise the work?—No, I do not think it would.

11997. A suggestion has been made here that the agricultural education of that area marked blue on the plan there might be excellently provided for in the following way:—In your elementary schools you would give such a nature study as you can, and interest in rural and nature knowledge, and scholarships tenable at the Basing school, which is of an intermediate character, might be awarded by the different counties represented in that area: the best of the Basing students might proceed to Reading, which is a collegiate centre, and then the final object would be the university department of agriculture, when established at Oxford, where a degree in agriculture would be given. Under no conceivable modern conditions can individual counties provide each of those grades themselves?—No, certainly not.

11998. It can only be done by such a combination of counties as I suggest. Is that a plan which at a convenient moment you might consider and bring before your local authority? You see what I mean?—Yes, I quite see what you mean.

11999. In Berkshire you have got Reading: everybody cannot go to Reading, because you know the instruction there is above the requirements of the small farmer or the upper labourer: they want something much more like the instruction given at Basing. You might give a few scholarships tenable at Basing, which is in Hampshire. Hampshire sends some of its best scholars on to you at Reading, and Buckingham helps similarly. The very best of them would go to attain a university degree at Oxford; because the Reading people can only get a London degree if they want a degree. I invite your consideration of those matters, and possibly you may be able to bring them

forward at any agricultural committee of yours as a means of solving the financial and geographical difficulties?—I quite see what you mean.

12000. Will you kindly consider that?—I will certainly consider it, but of course I could not give you an answer now.

12001. (By Lord Barnard.) Assuming that any national organised system of agricultural higher education and instruction should be established, do you think that the county, or perhaps in some cases a group of counties, would be the best form of unit, or would you prefer larger areas. When I talk of a group of counties I am thinking in particular of Lincolnshire, where what appears on the map as one county is, for administrative purposes, three. The counties, or some such area of that kind would be a good local unit, and that the administration should not be in London, but should be local. Would you agree with that?—Of course, if anything of that sort was started, it is self-evident that the county could not run such a scheme as that by itself; no county could, except, perhaps, Yorkshire or Lincolnshire—large counties. It would be impossible for a county of the size of Berkshire to do it; no small county could do it by itself.

12002. You might do it in this way, if Buckinghamshire were to subsidise Reading to a certain extent on condition of sending so many pupils there free, and giving scholarships to so many more pupils who wanted such an education?—Reading has gone outside the County of Berkshire to do that to a certain extent. I mean they have some scholars from Dorset at the present time, and they have done a great deal of work for Dorset in the past.

12003. Any national system would, of course, entrust a certain amount of control and administration to counties, but counties should not, I suppose you will agree with me, be locked up in water-tight compartments?—Oh, no.

12004. If a national system were instituted there would be no reason why Gloucester, for example, should not send a suitable boy to Reading or to Newcastle?—No.

12005. You mentioned as a hardship that you had to send girls out of the county?—Formerly.

12006. It would not be an objection to a student to be sent out of a county if he got the education he wanted, and if the county paid for it?—No, but still it was a slur on our county when we instituted the scholarships for girls, that we had to go to a neighbouring county to help us out of our difficulty. Now we have established the girls' schools they are doing uncommonly well.

12007. On referring to the census of 1901 of males of 10 years and upwards, the number of people employed in agriculture in Berkshire, I see, are more than double that of those employed in any other industry. That indicates a preponderance of the agricultural industry, does it not?—If you take the villages round my part of the world they are as agricultural as any part of the county can be; there is nothing else carried on at all.

12008. Several witnesses have suggested, and we have had a great deal of conversation on the subject, the institution of a central body in London, perhaps a consultative or advisory committee connected with the Board of Agriculture, which should be, so to speak, the central exchange for all kinds of agricultural education work. Do you think such a thing would be feasible?—I should think it might; it would practically be the mouth-piece of the different counties.

12009. Yes, it would be something on the lines of the County Councils' Association?—Exactly.

12010. Are you a member of the County Councils' Association?—I was, but I could not attend to it. I had not the time, and so I could not go on with it.

12011. With the exception of subscriptions being authorised to be paid out of the county funds, it is purely a voluntary association, is it not?—Yes.

12012. It has been suggested to us that we should go a step further than that, that this body should be an authoritative body, a sort of assistant to the Government department, rather than as extending the scope of the analogous work done by the County Councils' Association. Do you think that would be an advisable thing?—I have not thought it over, but if you ask me to give an answer at once to the question, I should think it would be.

12013. Perhaps you will think that over?—Yes, but I should think it would be advisable.

Mr. C. J. DREWITT, called and examined.

Mr. C. J.
Drewitt.

27 June, 1907

12014. (*By Lord Barnard.*) You are a member of the West Sussex County Council?—Yes.

12015. Your Council has asked you to attend here in response to the invitation of this Committee to give us some information as to the line adopted by your county on the subject of agricultural instruction?—The Education Committee asked me to come here and confess our sins of omission, I think, more than anything else.

12016. West Sussex is practically in the same position as Berkshire with regard to its agricultural population, or was in 1901; that is to say those employed in agriculture are more than double the number of those employed in any other industry?—I was not aware of that.

12017. That is so. I suppose you will admit that West Sussex is to a great extent an agricultural district?—Yes, agricultural and residential as well. It has become very largely residential now with all these watering-places, and the building-out beyond the watering-places.

12018. In spite of that there is a very large number of people employed in agricultural pursuits in one way or another?—Yes, that get their living off the land.

12019. Are you a farmer yourself?—I am a tenant farmer.

12020. We have before us a publication, I do not know whether you are familiar with it, called the Annual Report on the Distribution of Grants for Agricultural Education and Research, which is published by the Board of Agriculture and Fisheries every year. It gives a list of every administrative county in England and under each head what is done in the way of agricultural education, and one reason why we asked you to come here to-day was because we observed in the case of your county that it was an absolute blank?—Quite blank.

12021. Have you ever done anything in the way of agricultural education and instruction?—Yes, in April, 1892, we started a travelling dairy school. That was fairly successful for a year or two. It was equipped for 10 students, and instruction was given in practical butter-making and in some kinds of cheese-making. The school travelled about from town to town. I may say there is no kind of cheese-making in Sussex at all. Eight schools were conducted at eight different centres.

12022. Do you know at all what it cost?—Perhaps I had better explain a little. This travelling dairy school was given up, after two years trial, in 1896 and transferred to a house at Worthing which was really set up for technical instruction for girls and young women. The dairy school was transferred there and made a permanent school, as it were. We only got 12 pupils and we spent £123 in teaching those 12 pupils at that centre.

12023. What happened to the house at Worthing. Is it still going on?—This house at Worthing after the 1902 Education Act came into force we were obliged to give up, owing to having to use the "whisky money" in providing for the pupil teacher centres and educating pupil teachers at different centres. The lady who conducted that school for us is now running the house and carrying it on on her own account.

12024. That looks as if there is some demand for such an institution?—She said she thought she could make it pay.

12025. What body in your county deals with agricultural matters such as the Diseases of Animals and the Fertilisers Act?—We have an Executive Committee for the Diseases of Animals.

12026. You are bound to under the Act, but does that committee consist of members of some other committee or is it a special committee?—It is a special committee with members chosen from different localities, so that each locality should be fairly represented on the committee.

12027. I find on reference to the previous reports similar to the one I have just referred to of the Board of Agriculture that in 1899 and 1900 you had some lectures in horticulture. Can you tell us why those were given up?—We carried them on till 1904 and 1905. The fact is we have been obliged to give up pretty well everything, even our evening classes, to provide for these pupil teachers' centres.

12028. Should I be right in saying that you began in a very small way and it has gradually vanished to nothing?—I think you would be right if you said that we spent nearly all our "whisky money" in trying to find pupils who wanted to be educated and in establishing these

classes, and they also started some of these amusement classes, as I call them. There were some art classes that did a certain amount of good, and some fretwork and wood-carving classes, and that sort of thing, that the ladies of the town used to attend for amusement more than anything else, and I consider it was a great waste of money.

12029. Have you ever taken any steps in the way of sending a deputation, or your Education Secretary, or anything in that way to see what was being done by other districts?—Not that I am aware of.

12030. You have received communications I dare say from the inspector of the Board of Agriculture asking you what you were doing in the way of agricultural education—perhaps that has never come before you personally?—No, the only thing I remember he came for was because some of our Committee wanted to go in for teaching something in the forest industry: there are a great many woods in the north part of Sussex, and they wanted to work up some classes for the hoop shaving.

12031. Surely you do not build such a high wall round yourselves in your county that you do not need or wish for further instruction?—I think we take the line that we have such a bump of obstinacy that we think we know enough and do not require any instruction: that seems to be the impression amongst the farmers and the County Councillors and those I associate with.

12032. Would you be surprised to hear that a similar feeling at one time existed in nearly every county in England with regard to agricultural education. We have had evidence from most of the counties now, and it is to the effect that that prejudice has almost entirely disappeared where systematic education in agriculture has been established: would you be surprised to hear that?—Judging of my own county I should, but not judging for myself.

12033. The evidence before us is that farmers have begun to appreciate very, very highly the assistance they have obtained in the practical carrying on of their business?—That has not reached Sussex yet: in fact, if you go and tell a Sussex farmer that you could teach him how to do things very much better than he is doing them, he would tell you that you know nothing at all about it.

12034. Are there many men employed in the woods?—In the winter time.

12035. Are they good woodmen?—Yes, that was the idea of starting these hoop-shaving classes.

12036. It is chiefly coppice work, I suppose—undergrowth?—Yes.

12037. At any rate that is an important industry?—Yes, I live in the south, but in the north of Sussex it is very important indeed.

12038. The supply of skilled workmen is rather diminishing?—Yes, the young men will not take it up. My idea is they do not care to work in the woods in the winter in the rough weather, and another thing is that the older men do not care to teach them.

12039. I suppose the attractions of the coast towns draw away a good many of the young men?—Yes.

12040. Have you difficulty in getting the skilled labour on your farms?—We draw a good many from Hampshire. The young men go into the towns and on to the railways and so on, and we recruit a great many from Hampshire and Dorsetshire.

12041. The farmers are all large and important people in West Sussex, are they not?—Yes, most of ours are considered large farmers.

12042. Where are their sons educated?—Do you mean as farmers?

12043. No: where do they get their general education?—Very widely—I was going to say all over the world. My own sons I sent to the Grammar School at Berkhamstead, and a great many of the Chichester boys have gone there.

12044. Where do they get their technical instruction?—On their fathers' farms: but I am sorry to say very few are taking farming up. Our farmers are being replenished from Devonshire mostly in my district. As the old farms are given up, the farms have not been taken up by Sussex men, and they are mostly taken up by Devonshire people.

12045. Is it not a fact that there is an enormous fruit and vegetable growing industry that has sprung up on the coast?—Yes—principally glass.

12046. That has to be conducted by skilled men?—Yes.

Mr. G. J.
Druitt.

27 June, 1907

12047. I wonder where those men are trained?—I do not know. Very few of our men have gone into the gardens, at least very few round Chichester where I live: in the Worthing district, I believe, a good many have gone into the gardens.

12048. Worthing is in your district?—Yes, it is only about 18 miles from me.

12049. There is no provision made in your district for those engaged in this industry, which is a growing industry?—We had classes for that sort of thing under the Technical Instruction Committee.

12050. Do you think the men engaged, say, in the woods in North Sussex or in farming in your own district, or in the glass fruit-growing industries round Worthing, might get, as people in similar industries have done in other parts of the country, instruction and scientific knowledge through the means of some of these colleges and institutions, which are marked on that map there, which would enable them to pursue their industry with considerable benefit to themselves?—I feel sure of it.

12051. (*By Lord Moreton.*) I am not, unfortunately, myself acquainted with West Sussex. Is the farming there of a high standard compared with other parts of England?—On the coast we are mixed farmers: further back on the downs we are flock farmers, and in the north, where the woods are, they are small farmers with quite a different class of farming—whether equally high-class farming or not I am not prepared to say.

12052. Is it your opinion with your experience of the district that those who are farming the land in Sussex are farming it so well that there is nothing for them to learn, and that they are getting the most out of the land?—They have not got so far yet as to know that they do not know anything at all about it: they want a little more knowledge before they will find out that they do not know anything: that is my idea of it.

12053. The Chairman drew your attention just now to what had been done in other counties, but I think he omitted to say that we have had evidence from a great many sources that in those places where the feeling on the part of the agriculturist has turned right round in favour of scientific teaching, it has been in those places where scientific teaching was started and carried on almost in opposition to the wishes of the farmers for some time. Of course you cannot expect people to realise the advantage of such teaching until it is brought before them?—I quite agree with that, and my opinion is that if we can only place an experimental farm in the middle of West Sussex where scientific teaching with experiments and all that sort of thing could be carried out so that the farmers could just go and see what was being done, then we should wake up: but I am afraid we shall have great difficulty in waking my brother farmers up unless we get something of that sort. We had an agricultural association at one time, and we tried to get agricultural lecturers down—Professors Lloyd and Long did come down and try to wake us up a bit, but the attendance was very bad indeed, and we were obliged to give it up.

12054. You think there is an urgent need that money should be spent on agricultural teaching in your district?—I do most distinctly; we want the science of agriculture brought before us more; we are all right at holding a plough, but what we want is for the young farmers to take up the scientific side, that is, as regards the application of artificial manures and the science of botany, the value of crossing different cereals, and the best grass with which to renovate your pastures for the butter-making and for the grazing stock. We want to be woke up in that way, in my opinion.

12055. The only way, you think, is by actual demonstration to the farmers?—Yes.

12056. (*By Mr. Acland.*) Before the Act of 1902 did you spend all your “whisky money” on education, or had you to apply for relief to the rates?—We used it all; but the way it was used I call waste of money.

12057. You used it all from the beginning?—Yes.

12058. As soon as the Act of 1902 was passed you found an extra strain on your funds, in that you had to provide centres for pupil teachers, and so on?—Yes, and it takes all our money now nearly. We get about £3,700, and it costs us over £3,000 for our pupil teachers: we used to get £4,200 at one time.

12059. So that, even if you saw your way quite clear to spending more money on agriculture, you would find it much more difficult to spare the money now than you would have done a few years ago?—Yes, unless the Government take up, as we consider they ought to do, the education of the teachers, we could not do it possibly.

12060. Is there any chance of your raising the rate for other than elementary education?—When we took to teaching the pupil teachers in centres we got behind, and after a great deal of pressure the County Council have allowed us to raise a penny rate, now we have got so far that we have brought out a scheme for the secondary schools in which the pupil teachers will receive their education, especially for girls in our county, and we are raising a penny rate now, and we have had plans got out for two secondary schools—one at Chichester and one at Worthing.

12061. So that if any additional aid took the form of helping those that help themselves, they would not find you unwilling to help yourselves?—I think not at all; I am sure the Education Committee would not be unwilling. The Education Committee is composed of so many members from the County Council and so many co-opted members, and when we speak of the County Council it does not quite mean the County Council—it means the Education Committee.

12062. Is there any large proportion of the Education Committee representing the rural districts in the county that is anxious to spend money in the way that you would like to spend it?—I am afraid not.

12062A. That has got to come?—That has got to come.

12063. (*By Mr. Latham.*) You made the remark just now that your agricultural population as regards masters was diminishing?—Yes, I should say considerably diminishing.

12064. And that you have had a very large invasion of men from Devonshire?—I will not say a large invasion; what I say is that the sons of the Sussex farmers do not take up with farming and their places have been filled considerably by an importation from Devonshire, and the rest of the farms have been taken up by amalgamating farms. My holding I have now used to be six or seven farms at one time.

12065. I suppose the farming interest in West Sussex has now got to be of much larger occupations than they used to be?—Yes, especially on the coast where I am.

12066. Are these Devonshire men quite satisfied to lie idle and not get any more information than you appear to want?—I take it so; we do not get any applications from them.

12067. There has been no offer made to them, has there?—Yes, in this way—perhaps I ought to have said before that we offered scholarships to the Agricultural College at Wye, and we only had one application, that was from a boy of 14 years of age, so we could not send him.

12068. I do not think you are likely to get any applications under your circumstances. How was the boy to get up to the standard of education necessary for Wye?—It was not offered to him.

12069. No, but these lads are not trained sufficiently to take an interest in the scholarships perhaps?—One would have thought their fathers would know it would be an advantage to them if they are going to be farmers to get a little scientific training.

12070. I take it from what you have told us that the interest in scientific training is absolutely nil in your county?—So far as I can see it is absolutely nil.

12071. How could you expect boys willing to take advantage of an agricultural scholarship to go to Wye when they virtually did not know what it meant?—I do not go quite so far as that, because most of the boys are able to read, and their parents are able to read and they must know about it.

12072. There is a little advantage in scientific knowledge, and, of course, when boys get home they think the best thing they can do is to run about the farm at home?—But, still, you would think the fathers would know there must be great benefit to their boys in after life if they have a scientific knowledge of farming.

12073. I take it from you the county generally has not got that idea?—I think they have not got that idea.

12074. For how many years did you offer these scholarships?—Only one.

12075. Then it was not very encouraging either to the schoolmaster or to the boy who took any interest in it if it died the first year simply because there was no application for them. Would not it have been much better for the interest generally even if they had not been taken up that they should have been continued for at least three years?—We wanted the money in other ways during those three years.

Mr. C. J.
Drewitt.
—
27 June, 1907
—

12076. You lost the interest in agriculture ?—We had felt the pulse and had found that there was no one who cared for these advantages, and we wanted the money in other ways, and we thought that it would be better to use it in other ways.

12077. Last year your "whisky money" was £4,149, and you have not given a fraction of it to agriculture, although I know very well agriculture is your only industry: the residential part affects those who actually live there. Is that state of things satisfactory to the agricultural ratepayer ?—That all this money should be given to other things and not agriculture ?

12078. Yes ?—Not at all.

12079. The agriculturists find a great part of the rates do they not ?—Certainly they do: a great deal of the money in Sussex comes from the agriculturist.

12080. If you allocated all this money to secondary education the urban people very much get the better of the rural people ?—Yes, very much indeed. According to my return here we had £3,817—that is what we received.

12081. In answer to Mr. Acland you said that you allocated the whole of your "whisky money" prior to 1902 to the benefit of agriculture ?—No, excuse me, to education. We only had the dairy school then and these bee-keeping and poultry classes that affected agriculture in any way, so that there was very little given to agriculture.

12082. Although you say you did not put the "whisky money" into agriculture, you put it somewhere that saved the rates ?—I do not put it in that way.

12083. Then will you be good enough to tell us how you do put it ?—There was so much "whisky money" given to our division of the county. The Technical Instruction Committee was appointed, and they had a free hand practically from the County Council to spend the money as they liked. They tried to do a little for agriculture, like those classes I have mentioned, but they found they did not get much encouragement there, and the remainder of the money they spent in the towns in what I call these amusement classes, such as fretwork and wood carving and those sort of things, and really the money was wasted in my opinion.

12084. You never took up horse shoeing ?—I am not quite sure whether we did or not. I know there was some talk about it. A neighbouring county did, and Sir Frederick Fitzwygram was very keen on it in Hampshire, and I rather think we did have a class or two in horse shoeing. We got him to help us to find a farriery place in which to teach these classes.

12085. Was it so unsuccessful that you could not manage beyond a class or two ?—I think, like other things, it died a natural death.

12086. Through lack of interest ?—Through lack of interest.

12087. Not that the smiths are so well instructed, or the horses so well shod that they could not be improved ?—No.

12088. Really there was a demand for the work if you had someone to supervise it and carry it on ?—No, there was no demand.

12089. I thought you said the horses were not so well shod, and the smiths could be improved: does not that mean that there is a demand ?—I mean a demand for the instruction. Of course those who had their horses shod wanted them shod as well as they could be, and they would have been glad if these smiths had been taught by a scientific man, but the smiths did not go in for it, and there was no one to encourage them.

12090. I take it, you, as an agriculturist, would be very pleased if you had your horses shod by scientific men ?—Well, as a matter of fact, we have got a very good smith indeed.

12091. You, as a thoroughly good farmer, may be quite satisfied with your own occupation and what lies around you, but at the present time, seeing others who are not so well off, you have not done anything to try and improve them ?—I was not on the Higher Education Committee—that is, the Technical Instruction Committee—and I had nothing to do with it. It seemed to me that the money they spent was a mere waste of money, and I kept out of it as far as I could.

12092. With regard to the farmers at large, you have said to a certain extent they are satisfied with themselves. Do not you think they would welcome anything in their midst in the way of improving their position ?—Not unless you could demonstrate it to them.

12093. Of course you could demonstrate to them and you could have experimental plots and that sort of thing, and research work, but you seem to me to be so exceedingly well off in Sussex that very little could be done to improve your position—is that so ?—I think a great deal might be done to improve our position, but the thing is to get a desire for the improvement.

12094. You made a remark that you had had Professor Lloyd and Mr. Long down to lecture, and that they were not very successful ?—Yes.

12095. May I ask you what they lectured on ?—Some of the lectures were on dairy work, and some were on the use of artificial manures, and subjects of that kind.

12096. Is there any very great demand for artificial manures in West Sussex ?—We use a great deal.

12097. Do you not ever make a mistake in applying the wrong manures on certain lands ?—I do not know that we have, but I admit that we have wasted a great deal of money perhaps in putting on the wrong quantities, if that is what you mean, but I do not know that we have injured our crops by it.

12098. There are certain lands that are benefited and certain lands that manures do a great deal of harm to. Are you so clever in Sussex that you know how to apply the different manures to the different soils ?—We do not. Phosphate, for instance, is one of the best manures that we can use. At one time I had a little farm on the chalk on the hill, and nitrogen was what was wanted there and not phosphate. There was enough phosphate in the land itself, but if we had used the same quantity of nitrogen down where I am that we used there we should have injured ourselves, but down where I live phosphate is the best and cheapest manure we can use. That is the sort of thing we have found out by experience, but we have had to grope about and find it out, and if we had this experimental farm we could go and get information like that almost at once.

12099. Even at your age you would welcome an experimental farm to try and teach the junior agriculturists in West Sussex ?—Yes, and myself as well.

12100. There is no such feeling against this teaching in the county as there is against the lack of teaching ?—I am not so sure about that. I will not say against the teaching, but there is not the want felt for the teaching, if you can understand me—they do not feel the want of teaching.

12101. I suppose now and again you have been to the Royal Agricultural Society's shows ?—Yes, many times.

12102. Have you ever been to see their Scientific Exhibition, the Agricultural Education Exhibition, as it is called, where they show what an enormous amount of harm artificial manures may do if applied to the wrong soils, or in too great quantities ?—I do not think I have ever seen that.

12103. In that exhibition it is shown that very often artificial manures have almost ruined the land when they have been wrongly applied ?—I am sorry to say I have not seen that exhibition.

12104. It is so, and sometimes where there has been too much manure of one sort used ?—I have learnt a great deal from these sort of exhibitions, and I think they are educational, and are exceedingly good for instructing the younger agriculturists.

12105. Do you think your young men would not care for an exhibition of that kind ?—I think they would when they saw it.

12106. But unfortunately they never see such exhibitions ?—They never see such things, and that is what I say, that if we had an experimental farm set down in our centre they would be able to see the things themselves, and one would tell another and get them to go and see it, and a desire for more information and knowledge on these subjects would be spread in that way. That appears to me to be the great want with regard to agricultural instruction in our district.

12107. This Committee may take it for granted that you would welcome in West Sussex an experimental farm on such a basis as the Hampshire experimental farm ?—I do not know the Hampshire experimental farm; in fact, I do not think I have ever seen an experimental farm.

12108. I do not wish to assert that you have not been a great traveller, but a great many of these Devonshire men do get about the country a great deal and are very energetic men. Do you not think they would care for something of that sort ?—I should think they would,

because they seem very businesslike men, and they certainly try to be up-to-date, and I think are very much in front of our Sussex farmers on the whole, I am afraid.

12109. You know the terms of the reference to our Committee?—I have seen them.

12110. It is with a desire to improve the agricultural education in the country that we are sitting here, and if there was any more money allocated to the councils for agricultural education would your county welcome a portion of it?—Most certainly they would, but I think it should be allocated to agriculture and not to general things.

12111. We are sitting to deal with agricultural subjects only, and if we could get a certain amount of money allocated to agricultural teaching in your county do you think your county would feel disposed to pay a portion of their money towards it?—I should say so, most certainly.

12112. There is not such a very great feeling in the county that no money should go to agriculture, is there?—No, I do not think there is. There is a strong feeling in the Education Committee that it is really hopeless to teach us agriculture, but if it was once shown that we could be taught I think they would be very pleased to give some of the money towards it.

12113. You spoke of Wye just now. Do not any of your people in the county make visits there?—I have never heard of any of our farmers going there.

12114. It is not so very far off you, is it?—Yes, it is some distance, and it is not only a question of distance, but the difficulty of getting there: the rail communication is bad, and I do not know of anyone in West Sussex having gone. I know an East Sussex man who sent his son there.

12115. Is yours a dairy county?—No, I do not think it could be called a dairy county: ours is more mixed. As I say, in one district they are mixed farmers, and in another you get the flock farmers, and then on the clay land you have the smaller farmers.

12116. You have a very large quantity of downs?—Yes, and there are many flocks of South Down sheep in the county.

12117. So that really we may take it West Sussex is not an experimental county at all?—I should not think so: the dairy business is principally the milk business for the south coast towns.

12118. (*By Professor Middleton.*) I gather from your evidence that the county of West Sussex does spend upon and must take a very considerable amount of interest in higher education, because you spend your "whisky money" which is nearly £4,000, and you are levying in addition a penny rate, which will bring you in nearly £3,000?—Yes.

12119. So that you will have about £7,000 to spend on higher education?—Our chairman, Mr. Hubbard, is very interested in the higher education, and does all he possibly can to work us up to it.

12120. You will spend between £7,000 and £8,000 on higher education?—I do not think we spend as much as that. I may explain that the first penny rate we made was because we had got behind with these classes, owing to the teaching at the pupil teachers' centres, and we had nearly all that penny rate to pay to that fund in order to meet the deficiency, and now we are bringing out a scheme for these secondary schools, and of course we cannot build them and carry them on with the "whisky money," and we are still obliged to have the penny rate.

12121. You mentioned the fact that your chairman was greatly interested in secondary education?—Yes, and elementary, both.

12122. It rather looks to me as if those who were running your Education Committee were not agriculturists. We will not say anything about the present, but in the early days, when you had your Technical Instruction Committee, there cannot have been any strong agricultural representation upon it?—No, I think the agricultural members kept off, like I did myself. We were very much disgusted at the way they spent the "whisky money."

12123. The secretary for technical instruction was perhaps not interested in agriculture. In most of the counties the secretaries have made it their business to develop some particular scheme, or, at any rate, the chairman and secretary together have prepared schemes?—I think he was more interested in these art schools and what I call amusement classes and that sort of thing.

12124. I fancy we can explain the position in West Sussex by these facts, that the agriculturist himself did not take any interest in the question, and that those who were responsible for seeing to his education did not offer, or, at

least, did not make any very definite offers?—We did not certainly succeed in stirring them up.

12125. There was no attempt at organised agricultural education?—Not the least, as far as I know. The thing was allowed to sleep.

12126. Since the Education Act of 1902 has come into force the money has disappeared, but at the same time we have got it now laid down by law that the local education committee must consider the educational needs of the district, and one would hope that your educational authority would definitely take cognisance of the needs of agriculture and attempt to push the subject of agricultural education to some extent. Do you think there is any prospect of that?—I do not think there is the slightest prospect all the time we have these pupil teachers to provide for: it has gone so much against us that we think we have got as much as we possibly can do to provide for them.

12127. In that case, the educational needs of your area may be interpreted to mean the training of pupil teachers?—As we see them. We do as much as we are obliged to do and no more, as it seems to me.

12128. You have thought over this subject I can see very well from your evidence, and you recognise the fact that if you want to teach the farmer you must demonstrate to him?—You must demonstrate to him until you arouse the interest.

12129. You think in the early days if there had been some scheme by which experimental farms or demonstration plots had been founded in the county, and if they had been well conducted that by this time agricultural education in your county would be appreciated and on a sound basis?—I quite think so. If you had plots showing the different effects of phosphate and nitrogen and sulphate of ammonia when applied in different parts of the county and on different soils they would have taken it up: and not only that, but if they had gone further into botany and into experiments in the crossing of cereals, and as to the best grasses for pastures, and that sort of thing, it would have been a success if we could only have been set thinking in the first place: but we have not got as far as that yet—we have not begun to think.

12130. From your evidence it is quite clear that the requirements of the soils of south Sussex must be very dissimilar from those in the northern part of the county?—Very dissimilar. There is great benefit in using basic slag on the clay in the northern part, and if they were to use that they would get a wonderful result. If they were to take a spot about the centre of the county for an experimental farm they would get nearly all the different classes of soil there.

12131. But unfortunately there was no one to organise and lay them out?—No, there is no one to set us thinking: that is really what it comes to. When the college at Wye was established, I believe it was mooted whether we should not join them, and the Duke of Richmond called several of us together to go into the subject, and it was talked over, and we asked then what our interest would be if we were to provide a certain sum of money, and they said we should have an interest in two and a half pupils in Wye College. We did not think it was worth going into for the sake of two and a half pupils, and so nothing was done.

12132. If you had joined with them they would have done all the work that you have been speaking of, the demonstration plots and so on?—Probably it would have been to our advantage if we had joined them at the time.

12133. (*By Mr. Medd.*) There was a particular reason for West Sussex not co-operating with East Sussex in the maintenance of Uckfield?—Yes, and that is the principal reason, I think, why the sum of money they asked us to provide would only give us the share of two and a half pupils. I know I suggested to several landowners, "If you will put down one shilling an acre yourselves, you can do very much more for us," but they said they did not see why they should do it.

12134. Do you feel you are absorbing the whole of your higher education money satisfactorily? Do you use any of the elementary education money for agricultural purposes at all?—Only for gardening classes at the schools: we have been at that for a twelvemonth or two years, and we are working those up.

12135. You have nothing in the nature of a higher elementary school?—Not in our district at all.

12136. If you find that all your available funds for higher education are absorbed, you might draw upon your elementary education funds to start a higher elementary school at some suitable centre, which would serve all your purposes

Mr. C. J.
Drewitt.

27, June, 1907

Mr. C. J.
Drewitt.

27 June, 1907

agriculturally, and not affect your present allocation of money. You had not thought of that, had you?—No.

12137. That is a method which you could satisfactorily adopt in West Sussex without identifying yourselves with Wye or with Uckfield, and you could do it either by the development of a village school or by the erection of a separate institution. You do already teach gardening at some of the village schools?—Yes.

12138. How do you get those teachers trained?—I think in almost every case our teachers have been practical market gardeners.

12139. Not the schoolmasters?—No; but I believe some of the schoolmasters are qualifying this year, and I think some of them are teaching now.

12140. You are building a hostel in connection with the Brighton Diocesan Training College, are you not?—No; there is a scheme on, but whether it will come to anything I do not know: we have been asked to join in it.

12141. Would you endeavour in any further developments at Brighton or elsewhere for the training of teachers, to provide classes for them to obtain adequate instruction bearing upon rural subjects?—Do you mean at the Brighton College, or in our own district?

12142. Wherever it may be. As you have said again and again, this question of pupil teachers and their training is taking all your money, and all I ask is, occupying the position which you do in West Sussex, will you use your influence to get at each place, to which you may have to send teachers to be trained, classes for instruction bearing upon rural subjects?—I would with regard to agriculture, most certainly.

12143. You will?—I would do anything I possibly could to forward instruction in agriculture.

12144. You know far better than I do with regard to agricultural education that all village interest depends upon what is taught at the village schools, and if you have to get a good labourer you must have him taught to use his hands and his eyes as much as to use his brains: do you agree with me?—I do not quite—I think these boys are too young.

12145. I do not mean that they are to be taught agriculture. I mean to be taught to use their hands and their eyes and their brains?—I do not quite agree with you there, unless there is a special class for it. The Act says he is to pass a certain standard before he can leave school, and I do not think you ought to multiply what they are already being taught, because I think it would be very hard to keep a child at school longer than is absolutely necessary when his parents may be very, very poor, and would be deprived of his wages for that extra period.

12146. This does not require the introduction of any new subject or mean keeping the child at school any longer?—Then you must teach it out of school hours.

12147. No; you must alter your methods of instruction; that is all. What I mean is, you should base your lessons in reading, writing, composition, and so on, on rural subjects?—I may say my committee is in favour of that, but I am personally against it. I feel we ought to have these children taught up to their leaving standard and get them through as soon as we possibly can, unless the parents wish them to stay longer.

12148. My suggestion does not affect the age at which they leave school?—But if they are learning agriculture, and these other things, surely it must?

12149. No, it cannot be called agriculture; they begin at five years old, and it is merely a question of teaching them to use their hands and their eyes, as well as to use their brains, and to base their lessons on rural subjects?—They are multiplying the subjects in the schools, in my opinion, now a great deal more than is necessary, but if you mean it is only to educate the mind, I am with you, because my opinion is that the education that is given in the schools at the present day is more an education of memory and not of mind. They have to learn all these different things from memory that they are taught now, and then they leave school and perhaps go to the plough-tail and forget it all in a very short time, and I think it is very little good; but any education of the mind that they can be given I am entirely for.

12150. We are quite at one, and that is what I want you to use your influence for—that every one of these pupil teachers shall have an opportunity of learning how to use nature as the subject of instruction in school?—I should always be in favour of that—anything to expand their minds. I consider our educational system now is merely

an education of memory, to a great extent, and I do not believe in it.

12151. Following that out, if you were to take up my suggestion of a higher elementary school devoted mainly to commerce and agriculture, you would find that it would not trespass upon your existing funds and that you would be meeting the pressing requirements of the county in respect of agricultural education?—We do do that in a way with our scholarships, by sending some of the boys to the better class schools at Portsmouth and one or two other places where they are established. We have not any in our district.

12152. The agricultural population in the rural district should have their interests attended to?—I am not sure whether you are referring to those who are to be masters in agriculture or workers in agriculture, or whether you are referring to both.

12152A. In my references to the elementary schools I am considering the future labourer, and in my references to the higher elementary schools I am considering the sons of the small farmer. Here are you, avowedly an agricultural county, quite ready to provide every kind of instruction for everybody engaged in industrial occupations except agriculture?—Yes, everything except agriculture.

12153. (By Lord Barnard.) You have heard of the great deal that is done in British colonies and other countries for agricultural education in the way of obtaining and disseminating information for the benefit of farmers?—Do you mean information distributed from an official source?

12154. Yes.—No, I do not think I know that.

12155. Particularly in Canada that is the practice?—I did not know that; I know that they have experimental farms and that kind of thing.

12156. You are aware of the existence of the Board of Agriculture leaflets?—Yes, quite.

12157. Do not you consider that they are of use?—I am afraid I have not found them a great deal of use.

12158. Perhaps you have not studied them very carefully?—We had an outbreak of anthrax amongst pigs once and did the best we could with it, and wrote to the Board of Agriculture and asked them for advice. They sent an inspector down, who came with a big bundle of leaflets under his arm, and after inspecting the animals he said he did not think we could do anything more than we had done.

12159. Is not the Board of Agriculture the servant of the public?—Quite.

12160. And not the master?—Quite so.

12161. There is a college called the Harper-Adams College in Shropshire, which is one of the type we have been talking about to-day. I should like to read you a note I received this morning from my agent with regard to a visit of a number of agriculturists to that college. He says that on August 8th, 1906, 19 of my tenants paid a visit there, and they took a keen interest in everything there was to see and hear, and that they had a large appreciation of the opportunity given them of paying that visit, and that the time had now come for arranging for further parties to be taken, and might he take another party this year; and the agent adds that he thinks it would be desirable. Do you think if parties of your people were taken to see some of these colleges it would be an advantage?—Yes, I think it would do a great deal of good.

12162. You recognise the importance of scientific knowledge with regard to the use and the application of manures and things of that kind?—I do.

12163. That scientific knowledge can only be disseminated by trained persons?—That is so.

12164. Where are those persons to be trained; surely the administrative county of West Sussex is as much interested in securing good training for these men as any other county in England?—Yes.

12165. Would it not be a good thing if you and your friends and neighbours could arouse interest in such a thing as that?—Yes, it would be a very good thing, but I should not like to undertake it myself, knowing the material I have to deal with.

12166. Do not the local newspapers contain paragraphs—they do in most of the districts with which I am associated—discussing these subjects; paragraphs and very often articles relating to agriculture?—In my experience there have been more on the principles of gardening, not on

what I should call the larger operations or scientific matters. Of course we have an agricultural paper and we get all that kind of thing in that.

12167. You must know what is going on in the outside world?—I get a great deal of information from my agricultural paper, certainly.

12168. Have you heard of the Agricultural Correspondents of the Board of Agriculture?—Yes, my son is one for our district.

12169. Is that system worked for all it is worth in your county; is there much correspondence going backwards and forwards between the correspondent and the Board?—He says there is a good deal that comes, but I doubt whether there is a good deal that goes.

12170. Your county did not appear to have much knowledge that this enquiry was being held here?—I do not think so; I had not personally.

12171. I am told that every county was officially notified of it, and it is somewhat to be regretted, in my opinion, that an agricultural county like yours was not notified by your clerk of the fact that the Committee was sitting. I have had put into my hands rather an amusing newspaper extract which perhaps explains it. I see at a meeting, I suppose of your council, at which you were appointed to come here (for which we are very much

obliged), the report says you have come "to explain why West Sussex had done so little for agricultural education. It was explained that the task would not be an onerous one, and Mr. Drewitt said he thought he could tell the Commission in a very few words what he thought the Government should do"—My idea is that we should work right up, that we should have an experimental farm with scientific teaching to which we could send our sons, in each county area and then work up to these higher colleges. We want demonstration brought before the farmers. My idea is we should send them just for winter sessions, so that they may be able to come back on the farms during the summer, and if there are any that show they require more scientific knowledge let them work up to these higher colleges and take full instruction there.

12172. Would you agree with what a witness said this morning, that it is now the duty of the Government to direct and stimulate agricultural education?—I thoroughly agree with that. I think it means millions to our country. Every extra quarter of wheat that you can produce in this country by means of science adds very much to the wealth of the country; it circulates in the country and it must do good.

12173. The result must to a certain extent depend on how the county authorities respond to such direction and stimulation?—I think each county would certainly try and do its part.

Mr. C. J.
Drewitt.

27 June, 1907.

TWENTY-FOURTH DAY.

Tuesday, 2nd July, 1907.

PRESENT:

The Lord BARNARD (*in the Chair*).

Mr. DAVID DAVIES, M.P.

Mr. THOS. LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. J. W. SMITH called and examined.

12174. (*By Lord Barnard.*) You are a member of the Herefordshire County Council?—I am.

12175. Are you a member of the Education Committee of that County Council?—Yes.

12176. You are by business a farmer in Herefordshire?—Yes.

12177. And have been for a good many years?—All my life.

12178. You have an Agricultural Sub-Committee of the Education Committee?—Yes.

12179. You are Chairman of that Committee?—I am.

12180. Does that Committee consist of men who are interested in the land mostly?—Yes, they are all interested in the land—they are members of the Education Committee; the Agricultural Committee is a Sub-Committee of the Education Committee.

12181. Does that Sub-Committee create much interest amongst its members; do they take an interest in its proceedings?—There is an increased interest taken in it.

12182. What actually are its duties?—To superintend the agricultural education of the county; they spend about £1,200 annually.

12183. Would you briefly tell us how that expenditure is allocated. I see in the Government Report it says £450 on general expenditure, which is principally agricultural lectures. What are the operations of your Sub-Committee?—A permanent staff is maintained consisting of an agricultural instructor and organiser, who is in charge of the work, a gardening and fruit culture instructor and a dairy instructress; other instructors in veterinary hygiene, poultry keeping and bee management, cider making, and various agricultural processes, such as ploughing, hedging, sheep shearing, &c. These latter are employed part of their time only.

12184. Your lecturer in agriculture is a Bachelor of Science?—Yes.

12185. So that he is a highly-trained man probably?—He is.

12186. Are you extending or restricting this work of agricultural education?—We are slightly extending it year by year.

12187. Do you find any difficulty in getting the necessary funds from the county authority?—No; the county authority have really given us permission to go as far as £1,800, but we have only spent £1,200 up to the present.

Mr. J. W.
Smith.

2 July, 1907.

Mr. J. W.
Smith.

2 July, 1907.

12188. That, I suppose, is because you are going cautiously?—We are going cautiously.

12189. How long has this work been going on in the county?—I suppose about three years really—the present work.

12190. Practically you are only beginning?—It began some ten years ago, but it had almost collapsed, one might say, until we made a fresh start.

12191. What is your opinion of the practical value of such work?—I believe it is very successful, and I think it is doing great good to the young agriculturists of the county. It is giving much information and education, and it is the sort of information and education that I think the farmers require.

12192. Do you encourage farmers to make enquiries of you when they meet with difficulties, such as manures not having the expected effect and that sort of thing?—Our organiser is always open to give advice, and I believe he has many hundreds of enquiries during the course of the year.

12193. Do farmers come to him?—Yes.

12194. You make a note here, and it is a piece of information which we have had from most witnesses, that a certain amount of prejudice existed in the past against the work?—Yes.

12195. What is the present attitude of the farmers with regard to it?—I think that is gradually going away.

12196. You are of opinion, then, that if the work is persevered in by your Committee it will steadily become more useful and more and more appreciated?—That is my opinion.

12197. The instructors, as you say, go about a great deal and give advice. Do you issue any leaflets or bulletins?—Yes.

12198. You receive no aid from the Government?—None whatever, I think.

12199. All the funds are provided by the county?—I think we have some small grants for dairying and one or two other things, amounting to about £60 a year.

12200. At the present moment, speaking financially, you are not actually in need of funds?—No.

12201. Does your Committee contemplate a great extension of this work in the future?—I do not think they contemplate it from the county funds, but they all feel that there is a considerable field for further agricultural research and experiment which might well be conducted, but not by our county authority.

12202. You are aware that a good deal is done in that direction already in many places in the country?—Yes, but nothing is done in our county; there is not a single recorded experiment for a student's use, I believe.

12203. I hope you would not suggest that each county should lock its experiments up in its own bosom and not allow its neighbours to get any benefit out of them?—No, but I do hold that experiments carried out in a different county under different conditions, and on different soil and with a different climate, are no certain guide for our county to go by.

12204. Quite so, but your county would be different from other counties with which we have had to deal if one set of experiments would be sufficient. Does not the soil in your county vary considerably in different parts?—It does vary, but not to the extent that it would vary compared with soil on the other side of England.

12205. Have you ever considered whether experiments of the nature of which you have just been speaking might be carried on as part of a national system?—I do think so.

12206. What I wish to convey is, supposing it were found practicable to control and direct, not to carry out, but to organise and direct experiments of this character all throughout the country by a central department in London, say the Board of Agriculture, and to make the results of those experiments national property and circulate them for what they are worth amongst the different districts. Do you think that would be a good plan?—I think so; I think there should be one central authority to control, but it should have its stations at different places.

12207. Are you well off for secondary schools?—No, we have no secondary schools under the County Council.

12208. Have you no old grammar schools?—We have schools which might be called secondary schools, but they are not subsidised in any cases.

12209. You have some endowments?—We have some

endowments, but they are not specially used for agricultural purposes.

12210. When you speak of secondary schools, would you have secondary schools for agricultural purposes only?—I believe the secondary schools which are contemplated in our district will be schools that will give an education which will fit what you may call the needs of the working farmer class of the county.

12211. I do not know whether you have thought of what the result of such an arrangement would be. If secondary schools were established for agricultural education only, every industry would have to have its own special secondary schools.—I did not mean that they should have a separate agricultural education; I mean that they would have an improved education which would fit them for that particular work, a general education which they would have at a cheaper rate than they have at the present time.

12212. It is your opinion, in other words, that the young farmer ought to have a good general secondary education, which would enable him to take advantage of scientific knowledge afterwards?—Yes, up to a certain age.

12213. Would you suggest an age?—Yes; I think that the ordinary working farmer cannot afford to allow his boys to stay at school longer than 15, nor do I think it is of advantage to them to do so in their particular profession.

12214. You would not go as far as 16?—I would not limit it particularly to one year, but my own experience is, and I have had considerable experience with pupils, that if they are at school till 18 or 19, or at college, you cannot readily bring them back to do the details of their work; they learn the heads of their subject, but not the working detail.

12215. A suggestion has been laid before this Committee by many witnesses that after the future farmer has had a good secondary education at a secondary school, he should go and have practical experience for at least two years on a farm?—That is my opinion.

12216. And that then perhaps some of the more brilliant and intelligent lads might be disposed to go in for, say, a six weeks' agricultural course in winter, so as to learn a little agricultural science?—Yes; whether they are dull or whether they are brilliant, I think that would be a good thing for them.

12217. And perhaps here and there a specially brilliant boy might want to go to a university college and get a degree in agriculture?—Yes.

12218. That, of course, would not apply to the rank and file. Do you not think when a brilliant boy does appear on the scene, and such always do from time to time, that he should have an opportunity of further extending his own knowledge for the benefit, practically it comes to, of the whole agricultural community?—Yes, I certainly do think so.

12219. You are not satisfied, I see from your notes, with the education given in the elementary schools, particularly towards the close of the child's career?—No; I am not altogether satisfied with it.

12220. Of course, I am speaking only of agricultural schools; I am not talking of schools in towns so much?—My experience has rather been that there is a certain fixed curriculum for all elementary schools both in town and country. I maintain that the subjects taught in the country schools should be not altogether suitable for both the country and the town, that they might vary, and that we should have a training somewhat different for country boys, particularly in such subjects as gardening and some little botany and other similar things.

12221. Is nothing done in that respect in your county at present?—Very little, and, until lately, nothing whatever.

12222. It is beginning?—It is beginning.

12223. Possibly, when public opinion gets created, it will extend?—Yes; I am confident it will.

12224. (*By Mr. Medd.*) You know Lord Scudamore's school at Hereford?—Yes.

12225. They are doing good work there, are they not?—I think they are.

12226. (*By Lord Barnard.*) Do you not think a difficulty would arise in consequence of the fact that in a very great number of cases elementary schools serve both rural and urban, and what you might call semi-urban schools?—There could be very little doubt, at least in our county, as to what is a rural school and what is an urban school.

Mr. J. W.
Smith.

2 July, 1907.

12227. You have no large towns in Herefordshire?—No; Hereford is the largest; the school there might be called an urban school.

12228. You have no great industries, practically nothing but the cultivation of the land?—Nothing else whatever.

12229. Have you any large areas of woods?—No; there are some good woods.

12230. You have not mentioned the subject of labourers. I suppose, from what you have stated about the rural elementary schools, they are principally for the education of the farm labourers' children?—Principally.

12231. Both boys and girls?—Yes.

12232. I do not know whether dairying is carried on largely or not in Herefordshire?—No, there is not much dairying.

12233. Then I will not trouble you with questions about dairying if there is not much done in the county, and the same as to woodmen, if it is not a great industry. Is there anything more you would like to state to the Committee?—I do not know of anything particularly; I have attended by request to answer any questions you might like to ask me.

12234. (*By Professor Middleton.*) You lay great stress. I see in your evidence, on the necessity for experimental farms being established in counties?—Yes, for experiment and research in particular subjects.

12235. You say: "I hold that every agricultural county should have a station for experiments and research"?—Yes.

12236. You think that is really a matter which it is the duty of the State to undertake?—I do; I feel myself, from my own experience, that probably the experiments that have been carried on, for instance, at Rothamsted, have been of more value to us as agriculturists than all the science that has been taught anywhere at the schools, and if there was in each county a station where research could be carried on by thoroughly well qualified men, whom there was no doubt about, to confirm such experiments as there were at Rothamsted, and to conduct other experiments, it would be of the greatest value to young students of farming now, and you might say for all future time. It is really a national matter.

12237. We, of course, quite agree with you as to its value; but have you thought of the cost such a scheme would entail? You know the endowment that Rothamsted had. Sir John Lawes left £100,000 for that station, and we understand that even that sum is not sufficient, so that you might calculate for a station similar to Rothamsted you would want an income which would mean a capital outlay of something like £100,000 to £150,000?—No; I did not contemplate anything of that sort; I rather contemplated a station which would confirm such experiments as at Rothamsted in our particular county, and to conduct other experiments for our special industries, such as fruit growing and hop growing.

12238. A subsidiary station?—Yes.

12239. Have you not come across such subsidiary stations in the counties with which you are acquainted?—Not a station which, so far as my opinion goes, can be thoroughly relied upon.

12240. You have not been in any of the eastern counties, East Suffolk, for example, and seen their station?—No, but supposing I had been there and had seen their station, I should scarcely have expected to find that any experiments carried on there would have confirmed anything that had been done in our county. Of course, they might confirm it in a sense, but I mean as a matter of positive instruction.

12241. That is not my point. My point is that there are counties in England which are conducting experimental stations such as you indicate, and doing it for themselves, and East Suffolk is one of them?—If they are doing it in a thoroughly dependable manner, but to my mind it is vastly important that it should be done by men who are most qualified for the work, so that there should be no mistake about it.

12242. As a matter of fact, the particular station to which I referred is most carefully conducted: they have a thoroughly competent and reliable young farmer in charge locally, and there is a committee also which supervises all the work and everything that is done there, and the figures derived from that station are as reliable as you will get from Rothamsted. The point is that there are counties in England which do conduct stations

such as you indicate. You think that would be desirable in the county of Hereford?—Yes; but not at the cost or under the control of the county committees.

12243. You have referred, of course, to the need for local experiments, and you have said that it is a question of soil and climate, and you want experiments for the county of Herefordshire itself?—Yes, for our special industries.

12244. Is there not something else which makes a local experimental station desirable? Is it not very necessary that you should have something which the agriculturists of Hereford could see and visit?—Undoubtedly; that would increase its value perhaps by half.

12245. Would you not agree with me that the chief value of the local station is that it is open to the inspection of the local agriculturist?—Yes, that is one of its values.

12246. So that it raises his interest in the work and induces him to follow the results?—Yes, to take the case of a young Herefordshire farmer, there is no record of experiments, so far as I know, in our county to which he can look for reference; there is no guide book to give him the slightest instruction. He has merely to follow what his father can teach him, or what he learns from his neighbours; that is the extent of his knowledge.

12247. I quite agree it is very desirable to have these facts recorded locally. I only want to point out that one of the chief reasons for the local experimental station is to stir up local interest?—Yes, that is one reason certainly.

12248. In connection with the education of the young farmer, you complained of pupils who had been at colleges and who had continued their education there up to the age of 19 or 20, and you said that they would not go into the details of farm work afterwards. What exactly do you mean by that?—I mean they never come down to the detail work. It is of no interest to them to do what may be called the ground work, the elementary part of their work, the cultivation of the soil. They know the heads of their subjects, but they do not know the bottoms, and it is the details that may make the difference between a profit and a loss to the farmer.

12249. You are a great advocate of the farmer beginning young?—Certainly I am; I think if he is at school after 14 or 15 he is wasting time.

12250. Supposing the class to which Lord Barnard alluded existed in your county: that is to say, the clever lad whom you wanted to send on to the University to get a thorough agricultural education, would you have him go on to the land first and then go to the University afterwards?—If he is to be a practical farmer, to make a profit out of his farm ultimately, I should.

12251. You spoke of having had experience of pupils yourself?—Yes.

12252. That means farm pupils, I suppose?—Yes.

12253. How many do you take at a time?—Never more than two; still, I have been having these pupils for 30 years, so that I have had a good deal of experience in that respect.

12254. How do these young men turn out as farmers, if it is a fair question—how are you satisfied with them?—As a rule, the highly-educated collegiate ultimately leaves farming for some other occupation; he becomes a land agent, or emigrates; he is seldom sufficiently interested in farming, nor is it worth his while to continue it as an occupation for the purpose of making money.

12255. (*By Mr. Medd.*) Has it not been your experience and that of other farmers that the man who goes to the advanced college rarely intends to farm himself, that he takes up an occupation connected with farming, but does not become himself an actual farmer?—I believe he finds out in the long run that the occupation does not suit him, and therefore he adopts some other profession.

12256. As a matter of fact, from your experience the majority of men who receive the advanced training at a collegiate centre do not themselves farm?—They may farm, but they have assistants under them who do the details of their work.

12257. They are sufficiently well off to employ labour to do the work?—Quite so, they are not dependent upon farming as an occupation for a livelihood.

12258. Professor Middleton spoke of East Suffolk. I notice that their total allocation to agriculture is £475. Yours, I understood from what you said to Lord Barnard,

Mr. J. W.
Smith.

2 July, 1907.

was anything up to £1,800?—Yes, but that includes horticulture and various other branches.

12259. Yes, they do in the case of all these others. You have not spent the £1,800 yet?—No.

12260. There must be a great deal of miscellaneous work going on in Hereford to account for the very large expenditure?—Yes.

12261. Because it is large relatively?—Yes.

12262. What are the ways in which you spend your money?—Would you mind asking our secretary those particular questions, because he can answer them more readily than I can.

12263. Very well. One feels very often that a great amount of the money expended, as it were, upon agriculture, is expended upon the staff?—Yes.

12264. The administration, in other words, costs relatively far more than the actual work done?—There is very little work done except in teaching.

12265. You spoke of the defects in the elementary schools—that they do not, in other words, correspond to the requirements of agricultural people?—Yes.

12266. How would you differentiate them—what would you do to alter them?—The complaint I make is that there is nothing done, or little done in our elementary schools to interest the scholars in rural occupations or in rural life of any sort, and I think they might have lessons in various rural subjects.

12267. You come to this Committee and rightly make that complaint, but neither the Board of Education nor this Committee can help you. You have it in your own power to reconstruct the whole curriculum of any village school so as to bring it into the closest correspondence with rural needs?—I suppose we have.

12268. You have.—But still I am pointing out a defect in our present and our past education.

12269. No one could be more conscious of it than I am, but it only requires, I am convinced, a little organisation, a little effort, and the impression made on the neighbourhood is enormous. I will go further, I will tell you that the child educated on those lines is far more full of intelligence and adaptability when he comes into a town.—I quite agree with you.

12270. You agree with me in that, and you agree with me in what are the requirements. Now, occupying the position which you do in Hereford, I wish you would try and get their schools more modelled on what you and I feel to be their requirements. You told me you thought Lord Seudamore's school at Hereford is running on right lines?—Yes, I have heard so: I have not seen the school.

12271. I have heard excellent reports of it, I have never seen the school either, because it is rather out of my way. There is excellent work done there?—I believe there is.

12272. You want to go a little beyond the elementary school, in other words, you want to take those lads that are capable a stage higher? Have you ever heard of or met with any higher elementary schools?—I do not think we have any.

12273. No, there are none in England, but if you were to enquire from the people who have seen them, I think you would find that they are just what you want in rural districts. They take the child up to 15—that was the age you named—and during the last year or two years, he is engaged in some form of industry or in commerce or in agriculture: that is from the age of 13 to 15, and the others have general education and become clerks, but, as you and I know, the clerk who has been taught to use his hands and his eyes, and to observe, is a better clerk than the one who has only had to learn things out of books; is not that so?—I think so.

12274. Now we are quite agreed that you want something a little bit higher than that for those that are cleverer and whose parents can afford to let them remain at school until the age of 16 or 17. You have not a school of that type?—No, I do not think we have.

12275. There is no school of that type nearer to you than Dauntsey, in Wiltshire. Have you seen that school?—No, I have never seen it.

12276. It is excellently equipped, and it just takes a lad who can go from 13 to 16. Then you want for your man who gets to the top a collegiate centre, that is for the few who can go on to the most advanced posts in agriculture—men who will occupy posts, eventually, like those occupied, I may say, by Professor Middleton or Major Craigie, or Dr. Somerville. Those are the men who become the heads,

and very few have the opportunities of reaching those posts. Within your district there is no other institution beyond Cirencester for that type?—No, I should think not.

12277. Do you not think that we four counties, Hereford, Monmouth, Gloucester and Wiltshire—you see them on the map, they are white, there is nothing of the kind exists there—might combine and run those institutions. You would not be called upon to pay one half-penny to Dauntsey, you would merely send some of your better scholars there with scholarships. You have scholarships in Herefordshire, have you not?—We have one or two.

12278. And I dare say you do not know where to send them. There is an opportunity for the one following agriculture, and another in the intermediate stage—that is up to 17—to Dauntsey, and then you come to your highest agricultural scholarship, the one who can prolong his education till 18 or 19. Then you have Cirencester. Look at the rest of the map, and you will see some parts yellow and pink and green and blue. In those particular districts each of the counties comprised in them join to erect and maintain a collegiate and agricultural institution of a particular grade. You know as well as I do that money is so much wanted for other purposes now in counties that no single county can possibly maintain these institutions, and two or three counties must combine?—Certainly.

12279. My suggestion is, if I could see it carried out, that you and Monmouth might join in maintaining a higher elementary school. Your better pupils would go by scholarships to the intermediate school at Dauntsey, not costing you any more than the intermediate scholarships. It would cost you no more to send him there than it would to send him to London, so far as the actual payment went: you would do that by a scholarship. And for the advanced student who wished to rise to the highest points of agriculture, to become a scientific expert and so forth, you have Cirencester. That would bring our group there into correspondence with the rest. At present you are complaining about how little can be done, and that you are isolated—so you are, so is Monmouth, so are we, and so is Wiltshire. Wiltshire and Gloucestershire have the institutions, and it only remains for you to come into correspondence with them. You, jointly, might easily maintain a higher elementary school which would take the boys to 15, and send those that are capable of education up to 16 or 17 to Dauntsey, and the very advanced men up to Cirencester. You might think that idea out at some time. That is an idea of developing the whole agricultural interest of your county, because you are spending a very large amount, very much more proportionately than almost any county, and from what you have said and written your results are not as satisfactory as all that expenditure warrants.

(*Professor Middleton.*) We have still to hear a good deal as to what the results are from the Director. We have only heard one side yet. In going through the report I see there are a great many results set out.

12280. (*By Mr. Medd.*) My one idea is to get the education of Hereford, Monmouth, Gloucester and Wilts consolidated so that there shall be no waste of money. It is not to deprive you of any money, or any other county, but to enable each county to be in operation with those joining it so as to put all the money to the best advantage for each class of the agricultural community? I hope you will think about that.—I will.

12281. I had not seen your report, and of course I can tell from the amount of money you expend you must be doing a great deal of good work, I did not mean to imply otherwise, it was simply to try and bring you in with the adjoining counties so that you might have a good deal more weight in London.—Yes.

12282. Do you not feel that we, by a consultative committee of agriculturists meeting periodically in London, could learn much better what each county is doing, and could bring much stronger pressure on the Government?—I should think that would be a good suggestion.

12283. Cornwall, for instance, wants to learn what Northumberland is doing, and they could meet and discuss their various difficulties and could bring pressure on the Government which they otherwise could not bring.

12284. (*By Lord Barnard.*) You have had a good many suggestions made to you since you have been in the chair. Do they not prove the necessity for the work of agricultural education being national, and not locked up in individual counties, for the very reason that Mr. Medd has just stated that it is desirable that each county should know what is being done elsewhere?—There is certain work connected with agriculture which I think should be

Mr. J. W.
Smith.

2 July, 1907.

done nationally, that particular work which I have rather emphasized about the experimental stations. It is not easy to convince, for instance, members of a County Council that they are to work for the next generation, which practically it is doing in carrying out a great many of these experiments; they like to see results at once from the expenditure of their money. I could give you an instance now. We have a Cider Institute being carried on, which no doubt you know all about.

12285. Yes, we have had evidence from that Institute?—Personally I have the greatest difficulty in inducing our committee to continue to give £100 a year to that Institute simply because they see no present results from the expenditure of their money. I myself think that this Institute is splendidly conceived, and that the work which they are carrying on will ultimately be of the greatest benefit, but it will take a number of years to prove those benefits, and to make use of those benefits to the full. That is the opinion that I hold with regard to it.

12286. You have been convinced, and do you not think in time—and perhaps, with your invaluable assistance—others may become convinced also?—I do not know; certainly these sort of things do gradually trickle down, and one is copied by the other, but I am not quite sure; that it will not take a very long time.

12287. Still, according to your own evidence, we are only at the beginning of this work—you in your county are, at any rate—and it will require a great deal of patience and the expenditure of much time and money?—Yes, it requires a very great deal of patience and it also requires a great deal of tact, and you must show some results for what you are doing.

12288. You have alluded to the fact that some of these people who get this higher education become agents and teachers, surely agents and teachers are necessary members of the community?—Yes.

12289. Provision must be made for their instruction somewhere?—Yes, but I should like you to bear in mind that everything I have said is from the point of view of agricultural instruction in order to add to the productive wealth of each county, and I feel that that can only be achieved by the particular class of farmers whom we have at the present time, the working farmer; those are the people we want to improve.

12290. Yes, but then you have to have other well-instructed classes to help them to improve; for instance, you must have the teacher and the research workers and the agricultural chemist and analyst. —Yes, but there is no lack of those at the present time.

12291. Have you ever seen any of these institutes or colleges?—I cannot say that I have studied them very carefully.

12292. Which part of Herefordshire do you live in?—I live close to Hereford.

12293. You are not absolutely out of reach of the Harper-Adams College then?—I am not.

12294. A visit of inspection to that College or to some similar place anywhere else on the part of some of your farmers might perhaps indicate the sort of advantages which are to be got?—Yes.

12295. Has your county any scholarships by which you can send a clever pupil for higher instruction to the Harper-Adams College, or to Cirencester or even to Cambridge?—

I am not sure that we have sent any scholarships there, but many of our farmers send their sons to those places for some of the higher education.

12296. If you had scholarships more of them would be able to go, and men who could not afford it otherwise would be able to go?—Yes.

12297. So that that would be an advantageous way of spending money?—Yes.

12298. It has not been put to you, but I have no doubt what your answer will be, that education without practical knowledge is valueless to the farmer?—It is valueless in the sense of making a guinea by spending a pound—for making a profit out of his occupation.

12299. When I say valueless I mean that no man can be a really good practical farmer unless he has had plenty of practical knowledge?—He cannot be a successful one.

12300. I do not want you to leave this Committee with the idea that any of us are suggesting to you that farmers can be made in colleges; all we want to suggest to you, and we want to know whether you will agree with us, is that practical farmers can be vastly assisted, not taught their business, by scientific knowledge?—Undoubtedly. I thoroughly agree with that.

12301. (*By Professor Middleton.*) Mr. Medd alluded to a consultative committee which it is possible we might establish in London for the purpose of co-ordinating agricultural education. Do you think that your County Committee in Herefordshire would be likely to accept and act upon advice given by such a central body provided that that advice involved the spending of money on the part of the county?—I should be very doubtful.

12302. Do you think if this central committee had funds at its disposal and could give a proportionate grant, we will say to the amount given by the County of Hereford, that that might alter the attitude of your Committee?—Undoubtedly it would.

12303. Your view is that unless that committee had funds at its disposal it would not be very effective in modifying the action of county committees?—No, I think the county committees as a rule are connected with the land and they have certain ideas of their own, and unless you can show them it is clearly to their interest to alter, they are not likely to take advice from any source much.

12304. (*By Mr. Medd.*) May I add a question to Professor Middleton's; no suggestion has been made yet, I believe, that farmers as such should combine and form a committee of the kind that I have in mind, a consultative committee, but that the consultative committee would be part of the ordinary work of the county committee. You have your County Council Association, which sends a member to London, I do not know whether you are the member, but you have a member of that?—Yes.

12305. No one considers the cost of his going there. If he charges it it comes out of the county funds; is not that so?—Yes.

12306. Exactly in the same way you have members of the Farmers' Club and you have members of the Central Chamber of Agriculture, probably, who attend the meetings of the central body in London?—Yes.

12307. They go at their own expense, it will only be for two or three times a year, or they may go at the expense of the Chamber or the Farmers' Club, is not that so?—Yes.

Mr. J. O. PEET, B.Sc., called and examined.

12308. (*By Lord Barnard.*) You are the Organiser of Agricultural Education and Lecturer in Agriculture to the Herefordshire County Council?—That is so.

12309. How long have you held that appointment?—Two and a half years.

12310. What appointment had you before that?—I was Lecturer in Practical Agriculture in the University College at Reading.

12311. How long were you there?—Four years.

12312. You are a Bachelor of Science—of what University?—Of Edinburgh.

12313. Did you take your degree in agricultural subjects?—In agriculture.

12314. Did you come from a farm originally?—I was on a farm until I was 24 years of age.

12315. A very interesting report by yourself has been put into our hands by the last witness. I see you say the main feature of your work has been the development of a system of short courses of instruction?—Yes.

12316. Which was inaugurated a little more than a year ago?—Yes.

12317. I see you state those have been very successful?—They have been very successful indeed.

12318. Fewer evening lectures are given now?—Yes.

12319. That is lectures about the county?—Yes, in fact

Mr. J. O.
Peet.

Mr. J. O.
Fet.

2 July, 1907.

there are no agricultural lectures given. We did not give any in the evenings last winter.

12320. Can you tell us why?—Really there was not time for the work. During the previous two winters I gave a considerable number of evening lectures, working up interest in the subject.

12321. You have worked up the interest now, and you think the short course a very much better way of instructing the young farmer?—Very much better.

12322. I see there was one course at Hereford and one at Leominster?—Yes.

12323. The Hereford course was attended by ten students and the Leominster by eight?—Yes.

12324. Did those students lodge in the town or did they come in to the classes daily?—They came in daily, with the exception of one student, I think.

12325. Those courses would only serve those pupils in the immediate neighbourhood?—No, some of them came a considerable distance—about ten miles, I think, would be the limit.

12326. How do you propose to reach by means of the short courses students who live more than 10 miles away?—It is our intention to hold these short courses at different centres each year. We worked the north of the county last winter, and we shall work the south next winter.

12327. You record that one of the pleasing features in connection with those classes is the interest the old students take in the general work of the department, and the readiness with which they apply to members of the staff for information and advice?—Yes.

12328. Is it your anticipation that when more of these short courses have been held that many more farmers will take the same line?—We are hoping so, and I believe it will prove to be so.

12329. That is to say, a young man who has gone through a short course realises the advantages he has obtained, and that by keeping in touch with you he will get great advantages?—That is so, and he also influences people that he comes in touch with in his neighbourhood.

12330. So that you are, so to speak, leavening the existing generation of farmers?—Yes.

12331. The length of the course is 10 weeks?—It is.

12332. At what age do they come as a rule?—We do not take them under 16. We have no maximum limit, but I think 25 has been the greatest age.

12333. Are they men who have been farming on their own account or on their fathers' farms?—On their fathers' farms.

12334. I see also you mention the same point on the previous page. You say that an increased amount of work is now done in the way of private advice and visits in response to enquiries?—Yes.

12335. That, I suppose, you look upon as one of the results of this system of short courses?—Yes, and one of the best results.

12336. Is any fee charged for the course?—No fee is charged for the course. In fact, we make a travelling allowance to the students who come to these short courses.

12337. I will not take you through the whole of these items which you mention here, but there is one thing which occurs to me in this report of yours, and that is, that it must be rather an expensive thing to print with all these pictures?—I think it is quite a cheap advertisement of the work.

12338. It must cost a good deal of money, must it not; Mr. Medd has mentioned the subject of finance to the previous witness: does all the finance pass through your hands?—Yes.

12339. So that a substantial sum of that £1,200 must have been spent in printing?—The printing and advertisements last year cost £14 10s.

12340. Is that all?—That is all.

12341. You have a four-weeks' course in dairy work and poultry management?—Yes.

12342. Is that carried on on the same lines?—Yes, on the same lines.

12343. Is that for men or for women, or for both?—That is for women students only.

12344. Do you find the same results—does that interest the girls?—Yes. All the students I think we have had at those four-weeks' courses are people that have taken a short course previously in the travelling dairy school.

12345. It is to carry on and continue the education which they received in the travelling dairy school?—Yes.

12346. Of course you pay a great deal of attention in Herefordshire, naturally, to fruit growing and all the subjects connected with it?—That is so: that is one of our most important industries.

12347. Those lectures you do not give yourself?—No, I do not give the fruit lectures.

12348. Do you organise them?—I organise the whole of the work.

12349. I see you are starting gardening classes in elementary schools?—Yes.

12350. Are those successful?—I think they are very successful. The boys are very much interested in the work, and I think it will be very useful to them.

12351. Is work in these gardens conducted during school hours?—Yes. Our instructor does not exactly give the instruction there: he supervises it and gives a portion only of the instruction.

12352. Does the school teacher give instruction?—The school teacher in many cases, and in some cases a local gardener is engaged by the school managers.

12353. You also have a gardening class for school teachers—that is, to train teachers for this work?—To train them for that work.

12354. Some of them have sat for the Royal Horticultural Society's examination?—Yes.

12355. And were fairly successful?—Yes.

12356. In the way of experiments you have started experiments on the manuring of meadows?—We have two sets of experiments on the manuring of meadows.

12357. When were they started?—This is their second year.

12358. So that it is too soon to say much about them?—Yes.

12359. Did you publish the results?—We did not: we had duplicate plots, and the result was that the duplicate plot rather upset the results last year in some respects.

12360. I presume you intend to make public all the information you get from these experiments?—Yes, but last year we thought the results could not be used by anybody as a guide for manuring, so we did not publish them.

12361. It is your intention to publish eventually the results of your experiments?—Certainly. I may say we have had this season gatherings of farmers on these plots.

12362. Do many attend?—I had an attendance of seventeen local farmers on Friday evening.

12363. Are they much interested in the experiments?—Yes, they are very keen.

12364. Do they ask questions, and that sort of thing?—Yes, they are very much interested.

12365. You also carry out demonstrations in charlock spraying and so on?—Yes, we have made that very popular in the county: a great deal of it is done.

12366. You also have some lectures on farm hygiene?—Yes.

12367. You have nothing special to say about those, I suppose?—No.

12368. I should like to hear what you have to say with regard to hedging, ploughing, and sheep shearing—that appeals to the labouring classes as well as to the farmer?—It does, but a very large proportion of our students are young working farmers.

12369. Who is your teacher in hedging, ploughing, and sheep shearing?—I mean, what is he: I do not want to know his name?—He is usually either a very intelligent labourer or a small holder who has been very successful in competitions of the kind.

12370. Do you have many of these competitions in Herefordshire?—A great many, and there is a considerable amount of interest taken in them also.

12371. Is he paid?—Yes, he is fairly liberally paid.

12372. Are the teachers' methods ever questioned: I mean to say, are the classes ever doubtful as to whether the teachers' methods are right?—Occasionally, but very rarely I think, as the people we have engaged for that work are people that we have had for a very considerable time, and are looked upon as really good workmen and good teachers.

12373. You have not been there long enough, perhaps, but do you think there are any of these lads who have gone through your short courses who might with advantage go

further still and receive advanced education?—We have had some very smart young fellows through the courses, certainly—you mean who might take more advanced agricultural instruction?

12374. Yes.—I dare say some of them would benefit by it. In fact, I am sure they would by a little more advanced education.

12375. There are greater facilities in Scotland for such purposes than there are in Herefordshire?—Yes.

12376. Probably the very fact of the existence of the facilities encourages men to take advantage of them in Scotland?—Yes.

12377. (*By Professor Middleton.*) You went from England to the College in Scotland, did you not?—Yes, from the North of England.

12378. From Lancashire?—Yes.

12379. (*By Lord Barnard.*) There are three items at the end of your report that I should like to ask you about—prizes for efficiency in farm work is the first. Could you tell us what is the class of people who compete for those prizes, and how long they have been going on, and what the effect is?—These prizes for proficiency in farm work have been given for a long time in the county: I believe long before I went there. They are prizes for ploughing, hedging, and sheep shearing chiefly: we also give prizes for farriery—shoeing. Grants are made to local agricultural improvement societies, and the competitions are arranged by those societies.

12380. What do these prizes cost the county a year. I should like to know the total cost of that item if you could give it to us?—Just the grants separately or the instruction and grants combined for these subjects, or just the prizes?

12381. I am only going on this page?—The prizes amount to about £140.

12382. Out of your £1,200?—Yes.

12383. Do only members of these classes compete, or can anybody, whether he has been under instruction or not, compete?—Anyone who is within the age, and who has been resident in the county, but as a matter of fact all the competitors have been through the classes.

12384. Does much the same apply to the prizes mentioned on the next page for the best cultivated cottage gardens?—Yes, the grants there are all made to local societies, but there is no necessity for instruction in the case of those prizes.

12385. Do you think these two series of prizes are of great value?—I do. I may say this year will be the first time that the cottage garden prizes have been offered. Altogether the amount will come to, I think, £25, and it is very likely that the judging of these gardens will bring our instructor into contact with about 400 cottage gardeners in the county, so I think they are likely to derive a good deal of benefit from it.

12386. With regard to the last paragraph, "Assistance and advice to teachers," I think, if you would not mind my saying so, that is most valuable, but how do these words come to the knowledge of the people who ought to take advantage of them? How does this particular printed page get to the people for whom it is intended?—Practically the same paragraph as it appears there appears in the leaflet that I have, and that is widely distributed amongst the farmers.

12387. Do you post it to men you happen to know of—do you think they all know of it?—They do not all know of it, but quite a large proportion of them know of it now.

12388. Have you published it in the newspapers?—I think it has been published in the newspapers once only, at the commencement of the work.

12389. (*By Professor Middleton.*) How long have your short courses been in operation?—A year and a half.

12390. How long have you been in Herefordshire?—Two years and a half.

12391. How do you propose to arrange for buildings—you are going to move from one centre to another, I understand—and how will you provide the necessary accommodation?—We have no accommodation except one good room in which the classes are held: the whole of the class is taken by one teacher at a time.

12392. You find one room is sufficient?—Yes, one good room.

12393. Is there any laboratory instruction given at all?—No, there is no laboratory; we teach them very little science; I take them on manures and feeding stuffs

myself, but there is no laboratory work and very few experiments in connection with it. We give them as much outdoor work as we possibly can. About four afternoons in a week are spent outside.

12394. Botanical subjects do not come in much, chiefly, I suppose, because of the season of the year?—Yes, we scarcely touch on them.

12395. I notice you make it a condition that students entering this course must have spent at least a year on a farm?—Yes.

12396. Do you think that is quite necessary?—I think by doing that we are making sure that the people we take in this way are people who intend to be farmers later on.

12397. Do you think a year on a farm has much effect on a student's capacity; do you think it makes him a better student for your purpose?—For our purpose I believe it does, because he sees the importance of the work then; whereas if he comes straight from school he comes as a school-boy rather, without seeing the necessity and importance for the work as he does after he has been on a farm for a time.

12398. You consider all these short course students ought to have a practical knowledge of agriculture before going through the short course?—Yes.

12399. You have also been a teacher in one of the colleges, have you not?—Yes.

12400. You know, of course, the ordinary college curriculum. Would you care to compare for us the short course and the ordinary two years' course in so far as they affect the practical farmer? What is your opinion as to the relative value of the two? Perhaps it is rather a big question?—My opinion is it does not do to have the young farmer too long away from the practical side of his business. I think about two winters is a sufficiently long period for him to be in college.

12401. You speak with some knowledge, because you were more than two years away yourself, probably?—Yes, I have been a farmer, of course—I have been on a farm—and I have taken a good long course too, and I know the effects.

12402. I know the effects also, and I agree with you. What is your general experience with these short-course students, as to the interest they show in their work?—At least four-fifths of them are very keen.

12403. If you compare them with the students at the college, how would they compare as regards the interest?—Keener.

12404. That has always been my experience too. Then to come to your experiments: I understand that the experiments to which we have had some reference from the previous witness are really in the process of development?—Yes.

12405. You have not got far enough with them because you have not been at work long?—No, this is merely the second season.

12406. On what plan are your experiments conducted—are you using these Manorial Schemes at all?—Yes, we are following them.

12407. So that practically your experimental work is co-ordinated?—Yes.

12408. That is to say, it has been following the schemes published by the Board of Agriculture?—That is so.

12409. I was glad to hear you were not able to publish the results for the satisfactory reason that you employed duplicate plots?—Yes.

12410. In spite of that fact the experiments are yielding interesting results from the demonstration point of view?—Yes, very interesting results.

12411. (*By Mr. Medd.*) You mentioned in answer to Lord Barnard the general cost of administration, but I do not think you gave the actual figures. I do not want them in detail, but the proportion out of the £1,200 that goes to administration?—£513 7s. 5d. last year—that is for my salary, travelling expenses, printing and advertisements, hire of class rooms, and so on. That is all the expenses of organisation and all those short courses. They are not separated here.

12412. The amount is £1,161 in the last year I have?—Yes.

12413. (*By Professor Middleton.*) But it is not quite administration, is it?—No, that includes the cost of these short courses.

12414. (*By Mr. Medd.*) No, the short courses do not

Mr. J. O.
Pect.

2 July, 1907.

Mr. J. O.
Peck.

2 July, 1907.

come under administration?—But I am unable to separate the administration from these short courses.

12415. The cost of administration includes the staff and any office accommodation you may require, and, it may be, a certain amount of expense for a superintendent or director?—Yes.

12416. I do not suppose it does amount to more than £200 a year?—In our case the amount can only be small, because in this £500 here, you have the services of a teacher and the cost of these short courses.

12417. Then the amount is sufficiently small to more than satisfy me. That is what it comes to, because I want it to be as small as possible?—Yes.

12418. As compared with other counties your contribution is a large one?—Yes.

12419. Now in regard to these pupils who come to you for the short courses, varying in age from 16 to 18, what is their actual state of preparation? Have they been a year on the farm, or how far are they qualified in composition, arithmetic and such like subjects to take an intelligent part in the work?—The whole of them, except possibly just an odd student, are pretty well equipped. One half of them probably have been through a decent secondary school, or possibly rather more than one half, and the others have been, I think, generally the smarter lads from the elementary schools.

12420. That answers my question, because it is hardly credible that boys from the ordinary elementary school will after three or four years be equipped sufficiently to take a useful part in courses of any kind, whether they refer to farming or anything else. It is a most difficult thing to do. I mean men who are engaged in various forms of industry tell me that the lads coming to them are perfectly useless for the first year or two in regard to figures and mensuration, and also reading. But your boys come from elementary schools, do they?—Not the whole of them; from elementary schools I think we have had only the smarter ones.

12421. Then in regard to this spraying, have you any objection to that?—Is that the charlock spraying?

12422. Yes, have you any objection from any one?—No.

12423. Because there are cases in which the spraying is very much disliked?—No, there has been no objection raised to it in our county.

12424. Have you been hunting for the gooseberry mildew?—We have a little—we have sent one or two specimens out.

12425. Did you find it?—No, we did not.

12426. You have no permanent institution in your county, have you?—We have no permanent practical agricultural institution.

12427. Lord Barnard referred to the better facilities existing in the North, that is in either the South of Scotland or the North of England. If you compare our map in front of you, you will see Dauntsey in Berkshire. Cirencester is not mentioned, but of course you know Cirencester?—Yes.

12428. Do you not see that they provide you with exactly the same opportunities that you have in the North if you care to take advantage of them. Do you not see that Dauntsey is as good an intermediate school for agriculture for lads from 16 to 18 or 19 as you would find anywhere; and of course you have been to Cirencester yourself?—I have not been there. Though I have been to most of the agricultural schools in the country.

12429. But you know it by name?—I know it well by name.

12430. For these various gaps, and to co-ordinate education in the country, do you not think that Herefordshire, Gloucestershire, Monmouthshire, and Wiltshire could co-operate like the rest of England, because you see the rest of England by those coloured marks on the map is indicated as co-operating in maintaining various types of institutions, and thereby materially reducing the cost. Do you not think that would be a good thing?—It might be a good thing to take the more advanced students in that way, but I do not think it would be a good thing to discontinue, say, our own short courses for the sake of spending money in that way.

12431. No, I do not think it would, and I want to avoid your having to do that?—I think it might be a good plan to send up the better students from our short courses.

12432. What seems to have been your experience is that in your short courses you have a certain number of students

who could really benefit by more continuous instruction, to whom it would be an actual benefit if you had an opportunity of sending them anywhere?—Yes.

12433. Now Dauntsey is a school that answers that type. Supposing you sent two or three of your really promising students, you would have four months' experience of them or six months' experience of them, or, at any rate, you would have had a considerable experience of their capacity in your short courses?—Yes.

12434. Then you have in Monmouthshire also men who are capable of rising to the position of yourself and others of similar rank, and who must go to a college. That is inevitable. I mean in regard to your qualifications. Now if Hereford agreed in consideration of certain advantages, to send two or three scholars to Cirencester and two or three scholars to the lower grade school of Wiltshire, we co-operating in return for the advantages which you give us in short courses, I believe it would be beneficial to the whole area. What do you say to that?—But it appears to me that any one of these colleges would be very glad to accept any students we may send up to them.

12435. But at all events they would not accept scholars at Cirencester or at Wilts. They are limited by their charter; and there again the advantage is this, that all that area would be speaking as one in matters affecting agriculture, whereas to-day Gloucestershire speaks by itself. Nobody takes any interest in Gloucestershire. Herefordshire speaks for itself. But four or five counties combined as those in the East of England are can speak with much more force than one single county in the West acting alone, and not being provided, as I say, with permanent establishments for pupils. It does not interfere with the local work and you find that the local work, for instance, in Herefordshire is in no sense interfered with by the local work in East Suffolk?—I think that so long as it does not interfere with the local work it might be an advantage. But I do not think it would be profitable to take away money from, say, these short courses such as we are conducting now, or practically any of the work that we are doing now, to spend it on scholarships to be taken away.

12436. No, and that is not my idea. My idea is practically a sort of give and take. I say for certain considerations which we have to offer in Gloucestershire we will take your students, and you may have lads of ours on the border of Herefordshire whom it would be very advantageous for us to have at your short courses, who are not in any way qualified to come to Cirencester, and in the same way Wiltshire might take certain of your short course students, who in your opinion are worth having. The expense is a matter of detail, but it is a question of how far it would relieve you of local expense and how far it would, so to say, put the coping stone on your establishments in agriculture. I mean it would be better organised?—I think it would be well worth consideration.

12437. It is a matter for consideration purely?—Yes.

12438. You could not commit yourself to-day, and I could not commit myself to-day?—No.

12439. All I want to see is that white part of the map made like the coloured part elsewhere. At the present we are working in isolation?—Yes.

12440. (By Mr. Davies.) I think Mr. Medd has asked you what your county would be prepared to do in regard to having a central institution for higher education in agriculture and what would your position be personally, supposing that you were to have a college of that sort. Would the county be prepared to allow you to be more or less a servant of the college as well as a servant of the county?—I cannot say what the situation would be in that case as to my position.

12441. Would it not be an advantage to become a member of a staff of such a college and continue your work as before?—Certainly it would be an advantage.

12442. I think you told us that you considered the students who came to your classes were very much more interested in their work than the students at college?—Taking them on the whole, that is so. I am speaking of the longer course students at the college.

12443. Are you in favour of a special department for agriculture in a university college like Reading, for instance, or a college set up in a purely agricultural district, and not a branch of any other university at all?—I think a centre set up in a county would get a very much larger number of students from that county than a centre, say, in a university college would. In our short courses we should secure far more students by having those courses at home than by having them at a college some distance from home

Mr. J. O.
Peet.

2 July, 1907.

12444. You think on the whole it would be better if you could arrange for short courses at a university centre. It would be a greater benefit to the students, do you think?—I think it would be a great advantage to have some properly equipped centre in the district where such courses could be had.

12445. You would have one central place in the county, do you mean?—Yes.

12446. Instead of your migratory classes, as they are at present?—I think so, finally, but possibly the present arrangement is the best for beginning.

12447. You prefer to have that in a county instead of having a confederation of three or four counties and one centre to them all?—I should not like to give a definite answer to that question.

12448. But you know what goes on in every university college throughout the country where they have an agricultural side and where they arrange not only for short courses but for degree courses and diploma courses as well?—Yes. An institution of that character already exists in Cirencester, but supposing the place were not there and we were going to provide an institution of some kind, I do not think that an institution of a university college type would be the most suitable. It should be not exactly a college but more a farming school.

12449. Then you would supplement that arrangement with scholarships, taking your brightest pupils to university centres?—I think so.

12450. You would work it in that way?—Yes.

12451. Speaking roughly, what proportion of farmers' sons who come from the elementary schools attend your short courses now?—I think probably rather more than half of them have been to secondary schools?

12452. But I mean to say, taking the area in which your schools were held last year, what proportion of the men or boys who just that year had left school would attend your classes—a very small proportion indeed, is it not?—A very small proportion.

12453. You would simply touch the fringe at the present moment?—Yes, we should simply touch the fringe.

12454. There is a tremendous amount of work to be done before you would fulfil the function you would like to see fulfilled?—Yes, that is so. I do not think we could ever expect to get the whole of the young farmers to come to courses of this kind, but I do expect we should get a very large proportion of them.

12455. Have you tried intermediate classes in any of the centres in which you have gone in for short courses?—No. This coming winter there may be some.

12456. You have talked of very little science, but you said you went in for the technical more than the scientific side of teaching?—Yes.

12457. And you also told us that there are secondary schools about Hereford?—There are secondary schools but not many farmers' sons attend.

12458. Could you not utilise these schools as centres for more scientific instruction for farmers for your short courses, so that you could bring more science into your short courses by using the chemical laboratories and so on that are attached to these bigger schools?—Not at the present time, because the schools as they exist are not situated well for that work. But really secondary schools will very soon be established in the county under the County Council and then they will be available, of course, for that kind of training, and will be well situated for it too.

12459. You intend bringing the secondary schools into your scheme, do you?—I hope to.

12460. Is it your personal opinion that the secondary schools should devote themselves more definitely to scientific instruction in connection with agriculture?—Pure science—not what one might call agricultural science.

12461. Would you give a definitely agricultural bias?—I call it an agricultural bias, but still it would not be agricultural science, but chemistry and botany, and so on.

12462. Then, speaking in regard to the distribution of literature, have you leaflets which the Board of Agriculture circulate?—Yes.

12463. Is the circulation large in your county?—Yes, I think so.

12464. What is the means by which they are circulated there?—We distribute them ourselves to those who are interested, and others write for them.

12465. How do the leaflets get to the hands of people

who are not very intimately acquainted with the matter?—If they are not acquainted with the matter they do not get the leaflets, I am afraid.

12466. Would it be any use having the leaflets sent to all the post offices in the county and distributed by the postal authorities? Would that assist you in any way?—I think it would be useful.

12467. Then I see you have classes in your elementary schools for gardening. Are there any plots of land attached to these schools?—The classes in almost all cases are carried on in the school gardens, and the gardens are worked as a whole. There are not separate plots allotted to each scholar.

12468. But each school has a garden for itself?—Yes.

12469. Does that apply to all your agricultural schools?—Not to the whole of them, but to the majority of them.

12470. And have the secondary schools got them too?—I do not think any of the secondary schools have them.

12471. Then some of your lectures are prepared by the Parish Council Clerk, are not they?—Yes. The Parish Council acts as the local committee.

12472. Do you find that that works well in making known the fact that you are going to do that work? Do you find that a satisfactory arrangement when you arrive there?—Yes, but we do not trust altogether to that. I look after the advertising to a great extent myself.

12473. But you find the Parish Councils and the other local authorities do not form the best machinery for your organisation for carrying that work on which you want to do. You have got to get people who are actually interested in agriculture, and who are in close touch with your agricultural committee?—Yes, and when I am acting in the district myself I circularise all the farmers in the district directly from the office.

12474. Then, in addition to your short-course classes, you hold public lectures do you not, in different parts of the county?—Yes.

12475. Do you find that they are well attended?—I think the attendances are very good. They are very satisfactory indeed, and we certainly get the right class of people. We get the people who are interested: at agricultural lectures we get the farmers, and at the garden lectures the cottagers; we get people who come there to learn and not merely to criticise.

12476. These lectures are of a practical character, and you do not try to teach them science?—No, not at all.

12477. You find they are of practical advantage afterwards?—Yes, and the interest in the work is great. The interest in the whole of the work seems to be greatly increasing.

12478. Really it is more a means of advertising your work?—In the case of the local agricultural lecture that is so.

12479. They are not so much a means of instruction as of conveying an advertisement?—In the way of advertisement, and to let the people know that if they want special information they can apply for it and get it at the office.

12480. Then have you any agricultural circulating library in the county for farmers?—No, we have nothing of that kind.

12481. Do you think that would be an advantage?—Yes, I think it might be.

12482. It would be very useful for your short-course students?—Yes, it would be very useful to them.

12483. (By Professor Middleton.) You have studied or taught agriculture in a number of different districts, I believe, in Britain, and I should like to ask you whether you think the supply of University colleges and University departments is sufficient, or whether a further supply is necessary?—I think it is sufficient.

12484. Your short course aims at being a final course. You have no intention of preparing lads to go further, have you?—Yes, that is so.

12485. So that if you did wish lads to go to a University centre you would prescribe for them quite a different training from the training you give them in a short course; is not that so?—Yes, that is so. Ours is a final course, complete in itself.

12486. (By Lord Barnard.) You spoke just now, in reply to Mr. Davies, about secondary schools, and said that there are not secondary schools for farmers' sons. I do not understand what you mean by a secondary school for

Mr. J. O.
Peet.

2 July, 1907.

farmers' sons. How is that kind of school different from a secondary school for other people's sons?—A secondary school in which classics are the main portion of the education is not the school exactly, in my opinion, for training farmers' sons at.

12487. But why not?—I think a classical education is not suitable.

12488. But I do not imagine that a classical education is intended to turn out classical scholars only; I think most secondary schools at the present time have a very wide curriculum; but perhaps in Herefordshire it is different. I will assume that secondary schools in Herefordshire are perfectly classical, but what class of people in Herefordshire do want agricultural education?—At the moment I can only think of two public secondary schools for boys in the county. One has just got a fair proportion of farmers' sons, but it is not situated so that these can travel in daily. The majority of them would have to board. The other is a school where classical education and preparation for the University is aimed at.

12489. Then you rather qualify what you said, and instead of saying there is a want of secondary schools for farmers' sons, you say there is a want of secondary schools, and leave out the words "farmers' sons"?—Yes.

12490. It would be a pity to assume that a farmer's son does not want a general education the same as anybody else?—Yes, that is so, but when you get education stopping at the age of 15 the range must be limited.

12491. Does not that apply to an enormous number of people throughout the whole of this country?—Yes.

12492. Many witnesses have told us that it is most desirable that before the young farmer begins to specialise he should have a good general education, and do you agree with that?—Yes.

12493. Then an ordinary secondary school suitable for other classes besides farmers' sons would answer the purpose?—Yes.

12494. Then are you acquainted with the Farm School at Basing in Hampshire?—Yes, quite well. I have examined that school many times.

12495. Do you think that such a school as that would be of any use in Herefordshire—that is essentially a technical school? Some witnesses have told us that they would like to see a school of that type established in their county, and I do not know whether you would think it would be a good thing to have it?—I should be very glad to see it.

12496. The word "school" is rather a misnomer as applied to a place where farmers' sons can get technical instruction in their own business?—Yes.

§ 12497. (By Mr. Medd.) Would you prefer a type of school like that at Dauntsey to the type of school at Basing?—That is to say would I prefer a school devoted entirely to agriculture and not to general education?

12498. Or a school which gives a certain amount of time to intellectual work and the rest to farming work for advancing a lad?—I would prefer that the student should get his general education in an ordinary secondary school,

and that afterwards he should proceed to a school devoted entirely to agricultural and technical work.

12499. Then that lands us in this difficulty: Dauntsey is a secondary school with the predominant feature agriculture, whereas Basing School is a Farm School taking young lads in the main, with very little secondary education. Is not that so?—Yes, that is so.

12500. I thought from your answers to me before that you would prefer the lad to get as much secondary education as he could, and that you did not want a secondary school with an agricultural side combined with it. Such a school as Dauntsey was primarily intended as an agricultural school, and is merely nominally under the Board of Education, and simply gives all that it can give to agriculture, with due regard to ordinary education. It is of a higher class?—Yes. I cannot help thinking that it is much better students should get their general education in the secondary school, then have a time at home for learning the practice of farming and then obtain their special agricultural instruction in a school devoted to it.

12501. At what age would their education be over?—Very few will attend the secondary school longer than 16 years.

12502. Do you not more or less agree with me in this: you may send your boy to a secondary school where you like, but your ordinary farmer will not send him anywhere else to learn farming except at home?—I find that after the student has been on the farm for a little time he can pick up an agricultural education very much better than before.

12503. But I am talking about secondary schools where there is no agriculture, and where there cannot be?—Just so.

12504. (By Professor Middleton.) You would like them to have some secondary education, and then come to you as short-course students at 18 or 20?—Yes, about that age.

12505. Or if the student is going to the university, you would want him to continue his secondary education up to the age of 17 or 18?—Yes.

12506. And then get a year on the farm?—Yes.

12507. (By Lord Barnard.) One question on the point of Board of Agriculture Correspondents. Many of the witnesses here have been asked a question or two about it; do you know two or three in your county?—I know some of them.

12508. Have you ever made any use of them, or communicated with the Board?—Not through them with the Board.

12509. To try to get information from the Board?—No, although I have talked with them. They are people I know personally, and that I have talked about matters with, but not officially.

12510. You said just now the Board of Agriculture did do that kind of work?—Yes.

12511. Do you think the Board of Agriculture Correspondents might be made more useful as a means of extending communication and as a means of inter-communication between the farmer and these schools?—Yes, they might.

Mr. CHARLES B. STIBY called and examined.

Mr. C. B.
Stiby.

12512. (By Lord Barnard.) You are an Alderman of the Dorset County Council?—Yes, I am.

12513. And you are interested in the work carried on by your county in the way of agricultural and scientific and technical instruction?—Yes, we are.

12514. How is that work carried on by your county—by what authority is it carried on?—In the first place, when I say "we" I mean the Committee. Do you mean by an agricultural instructor?

12515. I mean how is it controlled—what is your Committee?—It is the whole Committee of Education.

12516. That is the statutory committee?—Yes.

12517. That is the local education authority?—Yes, that is the authority.

12518. Including co-opted members, I daresay?—Yes, we have some co-opted members, and they form a part of it.

12519. That is a very large body?—Yes.

12520. With many of them probably not interested in this particular subject?—Not the least.

12521. Do you think it would be an advantage to you in your county to do what is done in other counties, that is, to have a sub-committee, and that sub-committee to deal with this question?—Yes, I think it would. But you mean subject, of course, to the approval of the whole Committee afterwards?

12522. Yes; but that would be, I suppose, a detail?—I do not think the Sub-Committee would undertake that. But there are sometimes some thoroughly agricultural questions on which the Sub-Committee form an opinion, and the whole Committee confirm or object to it.

12523. You are an agriculturist yourself?—Yes, for 50 years I have been one.

12524. Do you know what the practice is in the neighbouring county of Wiltshire?—No, I could not say that.

Mr. C. B.
Stoby.

2 July, 1907.

12525. They have, we have been told by witnesses, a sort of agricultural committee which deals with a good many matters relating to agriculturists?—We have one in Dorset which deals with manual instruction. That Committee is not in any way connected with the Education Committee, except to spend the funds which the Education Committee allow them.

12526. It has been suggested to us by a gentleman whose name and authority you will no doubt recognise, Lord Fitzmaurice, and it has commended itself to me, and perhaps to other members of the Committee, though it might require legislation: that there should be a statutory Committee of each County Council which should have control of all matters relating to agriculture, including agricultural instruction, and also such matters as the Fertilisers and Feeding Stuffs Acts, the Diseases of Animals Act, and I should think Small Holdings, and that you should come under such a Committee?—Would that Committee that you suggest be entirely formed from the county.

12527. It would be the County Council Committee?—Would the County Council elect it?

12528. Yes, they would appoint it, of course. If it required an Act of Parliament, you might give them power in that Act of Parliament to co-opt?—Yes, I think it would be necessary to co-opt, because some County Councils might not have a sufficient number qualified to act upon such a Committee without co-opting.

12529. I take it in Dorsetshire you have plenty of agriculturists?—We are not over-burdened with agriculturists on the County Council. I should think there is not more than a seventh, perhaps, on it.

12530. I see a very large proportion of the males of the county over ten years of age are employed as agriculturists, so that practically agriculture is the preponderating industry of the county?—Yes.

12531. Do you mean tenant-farmers only?—I mean tenant-farmers actually renting farms. We have retired farmers.

12532. I meant anybody who is interested in or has any knowledge of agriculture?—That would be different. I was thinking you spoke only of tenant farmers.

12533. You have a considerable number of them on your County Council?—Yes, I think we have enough of them to get a committee who will understand it.

12534. You might have even a veterinary surgeon on such a committee?—Yes.

12535. I see from the notes you have given us that you have something to say on a question which is a little outside the scope of our reference, but it naturally touches on it, and that is the question of the supply of secondary schools. You have some secondary schools in the county, have you?—Yes, we have several.

12536. But you would like to see at least four of these schools, one for each division, with an agricultural side to it?—Exactly.

12537. Do you know of such a school, or can you mention such a school, so as to indicate to the Committee the type of it?—There is one at Sherborne.

12538. But do you know any school in existence with an agricultural side to it?—No, not outside the county of Dorset.

12539. But is there one there?—Beaminster has an agricultural side.

12540. Can you tell the Committee of such a school in any other county which you would like to see copied in Dorsetshire?—No.

12541. Then it is entirely an idea of your own as to the agricultural side?—Yes, my own and the Committee's.

12542. I do not know whether you are aware that such schools have not been universally a success or that the agricultural side has not been a success?—I think that has been due to some friction and not from natural causes.

12543. I am sorry to say in the school I am acquainted with it is due to natural causes and the agricultural side is steadily shrinking away?—Might I give my idea as to why I put that down in my *precis*?—

12544. Do so, please?—First of all I take it the secondary school would be a commercial education one, and the boy of 15, or between 15 and 16, if there was an agricultural side to the school, if he had had some scientific agriculture, would be better qualified when he returned home to his parents to carry out agriculture to greater advantage. I do not believe you can teach agriculture from a secondary

school so as to make a very good agriculturist. I have taken a great many pupils in my time, and I never considered I could turn one out satisfactorily until he had been through the whole routine for two years.

12545. The routine of farm work?—Quite so; because in one year he would not see the necessary and proper rotations. But I think a boy who has been to a good secondary school and had a little knowledge of science would be in all probability better able to take up the practical class course than without it.

12546. Then your theory is not quite the same as that of a good many witnesses we have had before us, which is to the effect that a good secondary education should precede any special form of instruction?—No, I think not.

12547. Then you have mentioned just now your conception of a secondary school, which is not exactly the same as mine. You mentioned a school specially providing a commercial education, but my idea of a secondary school is a school which does not provide for any specialisation?—No, not specially.

12548. But educates as distinguished from instructs?—General education. It is not classical. If I had two sons, one of whom I wanted to bring up to be a farmer, and the other something else, and there was a secondary school in the county that had an agricultural side to it, I would send that boy to that school in preference to any other secondary school. That is the point I wish to make.

12549. In the census report which I have in my hand here, there are 21 different classes of occupations in this county?—Yes.

12550. These are very roughly classed together, so that if your theory were carried out we should want 21 different classes of secondary schools, with a special side for each different type?—But I am only speaking of agriculture.

12551. But do you think the taxpayers and ratepayers of the country would consent to such a thing?—No, I do not think so, if you put the question to me directly. I understood the question you wanted an answer to was whether there was any benefit from it, but I do not think and have always maintained that it is not fair to any county to educate one particular class above another. I have always maintained that, and I have got into very hot water at times with my committee on that point.

12552. But still you would like to see some secondary schools; and would you say a word or two about Beaminster school now? I believe there has been an attempt to give agricultural instruction to the boys in that school, has there not?—Yes.

12553. It was given by the county lecturer, was it not?—Yes.

12554. It was not altogether a success, was it?—No, not altogether, I believe.

12555. And that was so owing to the fact that the instructor had a long way to go to get there?—Yes, that was so.

12556. He spent much of his time travelling backwards and forwards?—That is so.

12557. You also in your county have some short courses in agriculture, have you not?—Yes.

12558. Are they popular?—They are popular.

12559. And are they useful, do you think?—I think they are very useful.

12560. You were talking about what you would do with a boy of your own—and would you recommend any man you knew to go through that course of lectures?—Yes, I think six months will do a great deal of good.

12561. I see they have only just been started?—Yes, that is so.

12562. But you have heard perhaps that in other counties they have been found most useful and most successful?—Yes.

12563. Was the course held at more than one centre?—It was held last year only at Dorchester, but the Committee intended that the lecturer, if he had time, should go to different parts of the county every year so as eventually to cover the whole county in time. Now that another lecturer will take the work at Beaminster we shall have a larger area for lectures.

12564. That applies to the agricultural part of it, does it?—Yes.

12565. Then you have a dairy school, have you?—We have had a travelling school for many years.

Mr. C. B.
Stiby.
—
2 July, 1907.
—

12566. Do many members of your County Council have any objection to this money being spent on agriculture ?
—No.

12567. There is no disposition to cut your grant down ?
—None whatever.

12568. How is it granted ? Do you budget for a certain amount every year ?—It is budgeted.

12569. And you always get it, do you ?—Yes.

12570. I think that proves that your Council are interested in agriculture ?—Yes, and we are an agricultural county.

12571. Do you not in some way contribute to the college at Reading, or you were at one time a contributing authority to the college at Reading ?—Yes.

12572. What was your reason for discontinuing that ?—The reason was that we were deriving no actual benefits from it by sending any pupils there, and our funds were so low that we thought that we ought, wherever we possibly could save any money, to save it. That was the object. It was not done by any particular wish.

12573. I suppose your Committee gives scholarships ?
—Yes.

12574. Have they ever contemplated giving scholarships to intelligent farmers' sons, or boys who are going to farm, to enable them to get the benefit of the Reading course ?—No, that has not been considered.

12575. Do you not think that would be a good plan ?—I think so, providing, as I think I have said in my note, that a boy shows sufficiently superior intellect to make it worth while doing so ; but I do not think we could use the college generally.

12576. But I fancy it is an observation which is very old and which has applied from the beginning to Oxford and Cambridge Universities, that a boy coming with a scholarship is more able to derive some benefit than the ordinary pupil. But perhaps you give them indiscriminately in your county ?—For a boy of 16 going to carry out the business of a farmer in an ordinary way, I do not think myself that Reading College will do him very much good. When I say that, I do not mean Reading particularly, but any college.

12577. You would not propose that these scholarships should be abolished ?—No, certainly not.

12578. Then, if you have them, you must assume some school has some students who will seek them ?—Yes.

12579. Supposing you had students in your county who wanted to go, and showed sufficient aptitude, would not the scholarship be the best way of letting him go. That would save spending money on places where you have no use for them, and at the same time your pupil in Dorset could not complain of having no place to go to ?—The funds would not run to it.

12580. Not the scholarship ?—No, not to a scholarship to send away. But perhaps I ought not to give so decided an opinion, because I am not quite sure on the point.

12581. Supposing, for instance, a clergyman's son, a clever young boy, can get an exhibition to Oxford, you would say by all means let him go ?—I would send him first to my practical farm.

12582. But I am only taking that case so that when thinking of farming we may not get our heads down below the rest of the world. Taking the case of a clergyman's son or a bank manager's son who gets a scholarship, would that not be a good thing to go to Oxford or Cambridge with ?—Yes, decidedly.

12583. Why should not that apply in the case of agriculturists too, where you have a specially clever boy ? Why should you not give him facilities to go on and get higher education ?—Of course you mean chemistry and everything connected with agriculture ?

12584. Yes ?—Then any college such as that would be a most desirable place for him.

12585. But do you not think it is the duty of your County Council, as the public authority, to help any specially intelligent boy or girl either to advance themselves in knowledge by means of what is known as the "ladder" ?—Yes.

12586. To pay the fee, say ?—Yes.

12587. Would you not say it is a pity that that intelligence should be wasted to the country if it could be developed by means of a scholarship, and do you not think it is a good way of spending money on the part of education authorities ?—Yes, that may be done, but it would not apply to the ordinary agriculturist.

12588. It is found to apply in other counties, and why should it not apply in yours ?—I take it a college education of that sort would only be useful to boys of particular or special intellect.

12589. Quite so—that is exactly my meaning ?—But if you take an ordinary agriculturist's son, the same as my own son would be, I should not send him to college unless he was to follow it out as a profession afterwards, as an instructor.

12590. But those people must be found ?—Then I should send him, decidedly.

12591. If a parent cannot afford to give him the education, I want to ascertain whether it is not your view that the County Council should provide scholarships for such cases ?—Yes, I think so—I quite agree with that.

12592. I am reminded by the Secretary, Mr. Brooke-Hunt, that a former Reading student from Dorsetshire is now county instructor in Buckinghamshire ?—Yes.

12593. The system of scholarships, as I dare say you know, is a very ancient one in this country, and it has been found to work so well that it has been practically extended now to all classes in life, and you would agree with me now, I understand, that you do not see why it should not be extended to agriculturists too ?—Yes, I quite agree with you there.

12594. Have you ever sent boys to Dauntsey School ?
—No, not that I am aware of.

12595. Do you not think that it would be a pity if each county locked itself up and said that no boy shall go out of the county, and that sort of thing ?—I would send him anywhere where he could get instruction.

12596. I think you are of opinion, judging by the last words of your note here, that more funds are necessary for this purpose ?—Yes, that is so.

12597. I suppose I need hardly ask you the question, but you think they should come from the central Government ?—Yes.

12598. You will agree with me, I suppose, that any system of education supported by such funds would have to be part of the central system—an organised system all over the country ?—Yes, that is my idea.

12599. And that each county should not get more than its share ?—No.

12600. You would not object to its being a national system ?—Not at all.

12601. It would be for the benefit of your county and all others ?—Yes. You cannot have too much education.

12602. You do not approve of your present system of dairying instruction, I see ?—No, and not only myself, but I think the Committee are agreed there. We have had a very able lecturer. The opinion of the Committee, or at least it is my opinion, and the Committee I think are on the way towards it, is that instead of having an instructor going about to instruct, and purchasing cream and milk for demonstration, it would be better to select, and perhaps I might say subsidise, three or four cheese makers and butter makers properly qualified to teach as lecturers, and send boys or girls for six months to these dairies, where they would see the work carried out day after day, without our going to the expense of purchasing milk and cream and dairy utensils.

12603. That would almost the same as the old-fashioned system of apprenticeship ?—Yes, it would be the same exactly.

12604. Have you a sufficient number of qualified cheese makers and butter makers who have gone through anything like a scientific training ?—Yes, there are plenty in our county.

12605. They have been to Reading perhaps ?—Yes, and we have one or two dairy factors of very superior qualifications. There is one at Blackmore Vale who is a very highly qualified one.

12606. You would have no difficulty in finding teachers ?—I cannot see that we would, but anyhow no doubt it could be arranged.

12607. Do you take farm pupils yourself ?—Yes, I farm myself.

12608. And do you have pupils ?—Yes, but I have not one at present.

12609. But you have taken them ?—Yes, I have taken a great many.

Mr. C. B.
Stiby.
—
2 July, 1907.
—

12610. And you would have these dairy pupils on something the same lines, I suppose?—I have had them before. If a pupil, was sent to me for a year, I should not insist that he must stay two years. I only recommend two. I had a pupil from one of the colleges who came to me, but he was not much good.

12611. You think he should have begun with you first and gone to the college afterwards?—I think that would have been better.

12612. I fancy from the evidence we have had that is now almost the accepted theory, and I think it is universally admitted, is it not, that farming cannot be taught except on a farm?—It is impossible.

12613. I think we are all agreed on that. I have never heard anybody advance the contrary opinion yet?—It is utterly impossible.

12614. Have you ever heard of anybody who advanced the contrary opinion?—I do not think that I have.

12615. I do not think such a person exists except in imagination, when he is put up to be knocked down?—No.

12616. What is your opinion of instruction in gardening?—I think myself that gardening could be pushed to any extent to advantage, and I think it would take the place of horticulture. I think, providing the garden can be got, or a plot, it would be a good thing. I am strongly of opinion that gardening to schools is very advantageous—not gardening to the county. I am speaking now of elementary schools and not of secondary schools, of course.

12617. I was rather thinking of county instruction in horticulture, and not only in schools but elsewhere?—It is not generally appreciated I think in Dorset.

12618. Do the labourers have gardens mostly?—No, but we have a few gardens. But the Education Committee, wherever there is an application, or where they are able to start one, provide funds for it.

12619. (*By Mr. Medd.*) In your proof you say, "Gardening. This is not considered to have any special advantage"?—A great many of the Committee do not think so, but it is not general. Perhaps I ought to have said I was giving my own view of it.

12620. You were merely speaking of school gardening then?—Yes, but I am speaking now of elementary gardening.

12620a. (*By Lord Barnard.*) The words you wrote are: "Gardening. This is not considered to have any special advantage"?—Yes.

12621. What kind of gardening is that?—We have several schools.

12622. What kind of gardening had you in mind then?—I was really then thinking more of horticultural instruction, because that is carried on in the gardens. When I lived at Buckland Newton we had a gardener who was kindly lent to us by a gentleman in the neighbourhood. He went round to teach gardening, but it was really utterly a failure.

12623. (*By Mr. Medd.*) That may have been due to the teacher, of course?—That was a gentleman who had a very large garden, and he had a highly qualified man, but they did not appreciate it.

12624. Would you not now, after what you have said about the elementary schools, eliminate the reference to the elementary school here in your *précis*?—Yes.

12625. "Except in an elementary school," you would put it?—Yes, those words would explain exactly what I mean.

12626. Then it is "Gardening. This is not considered to have any special advantage except in the elementary schools"?—I think the gardens are an advantage in elementary schools.

12627. You would say, "This is not considered to have any special advantage except in elementary schools"?—Exactly—that will do.

12628. (*By Lord Barnard.*) Then you are very anxious, I think, that manual instruction should be encouraged in every possible way?—That is one of the things which the Committee are very favourable towards.

12629. What steps are they taking to encourage it?—It is rather a singular thing, but in South Dorset they have a grant of £133.

12630. From whom?—From the County Council, or from the "whisky money," as I think you term it. There is no other part of the county as a whole which has made any application beyond a place called Holt.

12631. I do not think you need trouble with the details of every district.—But it is a singular thing that South Dorset should take it up so thoroughly and have a grant of £133 or £130, I think it is, while in other parts of the county there are only three places in which they are granted £20 each.

12632. South Dorset is a very vague expression, because it has no Council or body, and how do you make that grant. You cannot make a grant to a place, but to some body or person?—There is a committee formed composed of South Dorset farmers, and they draw up their code for spending this £130 in thatching, sheep shearing, and various other things.

12633. For instruction in these various processes?—Yes. That is where I differ very much in regard to the instruction. I think it could be very much improved, and I hope it will be, because it is only in the last fortnight that I brought it before the notice of the chairman of that committee. The instructors under the present system have to give a certificate that they have given a lad three lessons consisting of three hours. Now what I should like to see done would be that the farmer or the head of a sheep shearing company should give a certificate that a certain lad had to his knowledge been at a farm working at that particular object for which he is going up to be tested. That would be much better than an instructor, because you know very well that, taking hedging, for instance, nine hours in hedging instruction is simply no use whatever. But a lad who has been with his father on a farm for a year or two years would have, of course, to be qualified to go up. The consequence is that the instructors being paid ten shillings, they go and get young lads that do not intend carrying on that occupation afterwards to come up, in order to get their ten shillings on the certificate.

12634. But that is not much use to us, because you are only criticising what ought not to be done, and we have not heard of it being done elsewhere. All we want to ask you is as to what should be done, and I think you have told us practically that?—I think this instruction, which is perhaps appreciated by the men, should be cut off.

12635. I gather from what you say that you think this money should not be expended in instruction at all, but in premiums to the lad who has been instructed?—I would not cut off the testing.

12636. But testing is not instruction?—I would strike that off.

12637. Strike off the instruction?—Yes, the instruction.

12638. And spend the money in getting premiums for the lads who had been instructed?—That is so.

(*After a short adjournment.*)

(*The Witness.*) Lord Barnard asked a question the answer to which I should like to qualify a little. It was whether I considered it fair to the ratepayers that one industry should be supported above another. From that point of view I said I did not think so. But if you look at it from another point of view, that is the national point of view, and think that the agricultural instruction is going to produce more food and so on for the benefit of the whole country, then of course I should give another opinion.

12639. (*By Lord Barnard.*) I do not think I quite used the word "fair," I cannot recollect, but what I intended to say was, that if you were going to do it for agriculture, would not you have to do it for a great many other industries as well. I was looking at it not from the agricultural side only?—Yes, but I thought I should like to make that qualification.

12640. (*By Mr. Latham.*) Do you wish this Committee to consider that the constitution of your County Council is detrimental to agricultural education?—No, certainly not. It is inclined to favour agricultural instruction, most decidedly.

12641. You made rather strong remarks just now on secondary schools with agricultural sides. Have you any schools in your district?—Yes, one.

12642. Is it beneficial?—I am scarcely qualified to say I know that they are or are not.

12643. Why do you wish the secondary school to have an agricultural side?—Because if agriculture is to be learned, and it is considered desirable, I think that there is no way like having it attached to the secondary school, because a secondary school is a school of general education and the instruction which they get there from an agricultural point of view might be very beneficial to them in after life, when they go back again to farm.

12644. Do not you think scientific teaching is a thing so

Mr. C. B.
Stibb.

2 July, 1907.

entirely by itself that it would be very much better that the scholars should get this scientific training at a college or at a centre set apart specially for the subject?—May I ask what do you mean by scientific?

12645. The teaching of the working of certain manures on certain soils and the amount of chemistry that it is necessary for a farmer to know, and the general things that a lad would get to know if he went to college?—Yes, I think that would be beneficial, decidedly.

12646. Then would it not be much better to allow him to go to a centre after 16 or so rather than try to cram him with that knowledge at the secondary school, which he has very little time to take, or would not it be a loss to him in his general education if he was obliged to take it?—But I understood that the scientific part of it was taught in the secondary school in a rudimentary way.

12647. (By Lord Barnard.) You did not understand that from me, I suppose?—No.

12648. Because my opinion is rather the reverse?—Just so.

12649. (By Mr. Latham.) The evidence we have heard here is that the general teaching of the secondary school is quite sufficient for these lads to go on with without scientific training, and if they are to have scientific training at all it would be much better for them to go to a centre or a college which was established for that particular purpose?—But if you take agricultural instruction as being very good from a secondary school you could not send the number that you are educating there to college. That would be impossible. You could only send one or two of the brightest, unless you give us a large amount of funds.

12650. Then in all probability the general body of men would not get any advantage by going there, but there are certain clever men, or men who wish to have a better education, who would like to go to these scientific schools?—Then such a boy as that it would be beneficial to and useful for.

12651. And would not scholarships from the County Councils be well applied to give boys that chance?—Yes, I think so, but if you did that you would abolish the secondary school teaching of agriculture, would you not?

12652. But I think the secondary school teaching should be the general education. The scientific education would be better kept a separate thing and taught at the scientific centres or colleges?—Then I gather from you that you rather recommend not having an agricultural side to any secondary school, but you would use the funds for certain boys from a secondary school going direct to college.

12653. I might say when you say use the funds it is impossible to stop using the funds for secondary schools. That would be obliged to go on, but whether it would not be better to have an increased grant or not is another thing?—Yes.

12654. You have spoken about your pupils that you have taken. Have not you ever had any pupils who would be very much better if they could get a little scientific education after you had done with them?—Certainly, if it was necessary for them.

12655. Possibly you have taken a great many pupils, and they have received great advantage by being with you, but I do not suppose you have ever attempted to teach them science?—No, certainly not.

12656. You will not go so far as to say that no scientific teaching is of any advantage?—No, it is of great advantage. For instance, it was only a few days ago I went to Mr. Forbes and said, "I have some roots, and I want to put lime on the plot," and I asked, "Would it be better to put soluble phosphate on it?" And he said "If you do the lime will convert the soluble phosphate into an insoluble one, and you will derive no benefit from it for the next two or three months." I only mention that to show that science is valuable.]

12657. That is excellent evidence to show that however much good your theory and your teaching and practice has done to your pupils, very possibly you would leave science alone, and if they could get a centre where they could have it taught to them, the very fact that you have been speaking of never would have existed?—I quite agree with you.

12658. Now with regard to the lectures, which you are very fond of, what sort of lectures are they?—I have not attended one, because I have so much to do besides, but the lectures were on general farming and veterinary science, and the diseases of animals, and the rotation of crops, and in fact the whole vocabulary of farming.

12659. Virtually, that to some extent is practical agriculture?—Yes, and I know that scholars up to the age of 15 attended them. The lecturer took them out and showed them the stock on a farm, and gave them, I believe, a very interesting lecture on it.

12660. These lectures have been entirely practical and not scientific, have they?—Entirely practical and no science whatever, except the results of science.

12661. Would it not be very good then if these lectures could be illustrated by experiments with manures?—Do you mean testing?

12662. Testing or demonstration?—That is already done throughout the county. Our instructor has certain plots of land given to him by different farmers, some on the chalk, some on the clay, and some on rich soils, and so on, and then conducts a series of experiments throughout the county, which are tabulated and circulated in the county.

12663. That to all intents and purposes is scientific, is it not?—Yes, that is scientific; and that costs about £20 a year.

12664. You made the remark just now that you knew better than allow your son to follow the occupation of his father as a farmer, I think?—Yes.

12665. I suppose that was more than anything else because the profits of farming have been lessened?—That is so.

12666. It was not because you disliked farming?—In my younger days I should have preferred following another occupation to that of farming, but was not able to do so. I should not bring up my son to be a farmer unless he really wanted it, which would be another thing, of course.

12667. But we must not run away with the idea that you have had 50 years of purgatory, must we?—No, certainly not; but farming takes such a big amount of capital, and I should originally have preferred to have used mine in another way.

12668. Altogether then, that is rather against what you are so strongly advocating. You say it is a benefit for people's sons to be brought up in a profession that you do not like yourself?—It is entirely a question as to whether they really want to become farmers; if they do, and come to me, I try to instil into them what I know myself.

12669. But you consider this system a very bad system, and you would not advise them to join it?—Yes; one man's son I took turned out remarkably well, and I did all I could to induce him not to follow farming. He said, "Yet you are taking my son, and I said, Yes, but I advise you not to send him to it."

12670. You have had no dairy schools travelling about the county, have you?—Yes, we have.

12671. Have they not done good?—I am not so sure of that. They have done good possibly. If there were these scholarships it would give the girls and boys the opportunity of seeing the work carried out in a factory by a qualified person. I do not mean to say they have done no good—certainly not.

12672. Your county has made a great deal of butter, has not it?—Yes, Dorset butter is considered to be the butter of the world.

12673. It has very much improved in the last few years?—I do not think it has been greatly improved. I think we have always been pretty well noted for it. The quality of butter is not obtained only in the making, but it has a good deal to do with the soil from which it is made. Some soils will produce excellent butter while other soils will not produce such good butter.

12674. That leads me to ask another question altogether. Have you had no help through science showing that certain soils make bad butter and that there is some reason for it?—Yes, I could give you some examples. If you stock land with sheep for some time then it will require different management from what it would if the sheep never have been put on the land.

12675. In years gone by, when we had very little scientific knowledge, that was scarcely found out, was it?—I think that has been generally known, ever since I can recollect at any rate. I should say that was generally known.

12676. You make a great deal of cheese in the county do not you?—Yes, the best cheese, and skimmed cheese, Skimmed cheese is the principal cheese—that is blue cheese.

Mr. C. R.
Stoby.

2 July, 1907.

12677. And you have had these schools?—Only this travelling instructor—that is the only school.

12678. But have not you had stationary schools in Dorsetshire?—No; there are factories, but not actual schools—not that I am aware of.

12679. But has not your County Council supported a school?—Not a school. The County Council provide money for this lecturer to go round lecturing and to make the goods.

12680. (*By Lord Barnard.*) An itinerant school only?—Yes, we have an itinerant school.

12681. (*By Mr. Latham.*) You have that, and you will admit that has done a very great deal of good?—I do not say a great deal, but I think it has done good. But I am not in a position to say it has done a great deal of good.

12682. I happen to know a little about it, and I was under the impression it was supposed to have done a deal of good?—You can get good out of everything, I hope, but I do not consider myself that it is the proper way of increasing the value of people's knowledge. I think there is a better way of doing it. That is all.

12683. But the better way you advocate is one that is scarcely any advantage to the general public. You cannot get people to go to these several places?—Yes, I think they would. They would go more than they would attend these lectures.

12684. But when they go to these dairy schools, are not they obliged to reside there?—Yes.

12685. You would scarcely get that done at the factory?—That would be covered by scholarships.

12686. That would be for one or two, whereas in this case you have a great many?—We spend about £400 a year for the itinerant teacher and that £400 would mean a great many scholarships, and then again we have to buy the utensils.

12687. And you are dependent very much on the farm that you go to?—Yes, of course you would have to be dependent on that—that is, on the dairy people. Very few farmers in the county of Dorset make their own goods. They are all let to dairy men.

12688. Do you pay the railway fares of the pupils going backwards and forwards?—At the present time?

12689. Yes.—No, I think not; but I am not sure, and I should not like to say yes or no to that.

12690. You were talking of gardening *versus* horticulture just now, and it would be very interesting to us if you would describe the difference to us between the two?—The gardening I thought favourably of would be in gardens attached to the technical schools, where the boys could be taught gardening by the master of that school.

12691. But would not that be in a very small way indeed?—It is in a small way, but it would be large if many schools took it up. It would be an interesting thing for the boys.

12692. I quite agree with that, in a very elementary way?—In a very elementary way.

12693. But would it not be of very much greater advantage if you could have a larger field and teach them root-pruning and fruit-growing, and that sort of thing?—My experience has rather been the contrary of that, because it was not appreciated where it was tested.

12694. It is just possible it could have been placed before them in an improved way?—Most decidedly. It was in a most crude way that it was put before them.

12695. Then I suppose we may take it for granted that that applies all round to scientific education?—No, I would not say that.

12696. But the better it is placed before the students the better chance it has of having a good effect?—Undoubtedly so, but I did not quite catch, I think, the meaning of your first question.

12697. I mean to say that almost all the failures in this instruction have arisen from the fault of putting the wrong instructor in the wrong place?—Yes.

12698. Then a few words with regard to manual instruction. You were speaking of sheep-shearing in the South of Dorset. Are not they very celebrated for sheep-shearing there?—I do not know that it is so any more than in any other county. I should not say so, but I have had no experience of other counties. But I should not have thought so. I should think that sheep-shearing was one of those things which men take up. But it has dropped out a great deal, because a great many now clip their sheep by machinery.

12699. But there is a greater interest, I mean, taken in it in the South of Dorset than in the North of Dorset?—I could not say yes or no to that.

12700. But that is the real reason why the manual instruction is taken more interest in in South Dorset—it is that there is a better class of man?—Most of us have our sheep shorn with shears, though a few adopt the other method. I should never have my sheep shorn with machinery so long as I could get shearers.

12701. Do you have hedging and thatching?—Take a person in my district. A pupil comes and thatches a rick for me without anyone with him, and then the Education Committee appoint a person who comes round and inspects the rick, and if the rick is worthy of a prize they give him a prize, and if not he does not have anything.

12702. That means that all this teaching is subject to competition?—No, the thatching is not necessarily subject to competition. I think I am right in saying that they will give a prize for any rick thatched by a pupil, provided it is satisfactorily done.

12703. It is all subject to some recommendation of his services, is it not?—Yes, decidedly so.

12704. And is hedging the same?—Hedging is competitive.

12705. Are there any thatchers who take pupils?—Yes, there are thatchers.

12706. Who are they?—Anyone on the farm. My thatcher, for instance, would take a pupil, and I know this was done. He went and saw one rick thatched, and that is his qualification. As thatcher he gets 10s.

12707. That means that all the people in your county virtually are encouraged to impart their knowledge to the juniors?—That is so.

12708. Now with regard to the management of sheep. How do you teach that, because that is important?—That is the most important thing which you can mention with regard to manual labour. It is a very difficult question as to managing it. The competition is in regard to several things. First, they would consider so many points for the larger rearage of lambs, which I do not consider myself to be any criterion of the value of the shepherd, because the rearage of lambs depends very much indeed on the owner of the sheep, as to whether he is a liberal keeper and a good manager. But the great point a shepherd should know, and which marks his intelligence generally, is how to move his field regularly, and move his crosses, and so on, and general tidiness and neatness and cleanliness, and so on. But I do not mean to say a number of lambs reared over and above the number is not an advantage, but it is not so great an advantage as a good knowledge of his work.

12709. (*By Lord Barnard.*) Is it desirable to provide general instruction for shepherds?—Yes, I think it is very necessary, and I think it is money well laid out.

12710. (*By Mr. Latham.*) I am a very large owner of sheep myself, and I find if they are not properly attended to when young, it is no use tying them in, however good the shepherd is, if he cannot manage?—Yes, if he has not intelligence he will not look to them when they are born or when young.

12711. But a thoroughly good intelligent man shows himself specially well in bringing up two lambs to a ewe instead of one?—Yes, I quite agree with that; and as you know a great deal about sheep you will know that a man that will feed £500 or £600's worth of purchased food a flock of 500 ewes would be expected to rear more lambs than a man who starves them.

12712. I quite agree, but as to providing material for a large number of lambs, it is a thing in his favour, and must mean intelligence?—Yes.

12713. Then next, I cannot see any advantage in teaching a man to mow by scythe?—No, I cannot either.

12714. (*By Lord Barnard.*) But you have put it down in your *précis*?—It is only as one of the things that is supported in our county, but I do not agree with it.

12715. (*By Mr. Latham.*) How do you encourage turnip-hoeing?—There is a field selected, and the competitors enter. I have never attended one, but they have a quarter of an acre each. But I am not very much wrapped up in that either.

12716. Have you a teacher in the ploughing matches?—They have not, I think, held any ploughing matches for several years.

Mr. C. B.
Stiby.

2 July, 1907.

12717. With regard to all these subjects, except sheep-shearing, are not they subjects the agriculturist should teach his men, and not ask the county to do it?—I quite agree with that.

12718. That makes me feel as an agriculturist that the master is not so good a man as he ought to be?—I quite agree with you.

12719. And that these things should be taught by the agriculturist and not by the public authority?—Yes, I quite agree with you; but my Committee would not agree with you. You must take that as a personal remark.

12720. (By Mr. Medd.) In the *précis* issued by your Committee they state they would like to have four secondary schools with agricultural sides. Did they give you any idea of what they intended?—Simply to follow on what is adopted already.

12721. One for each division in the county?—Yes.

12722. What did they intend to do?—To give the boys who intended to follow agriculture a better start, a better knowledge.

12723. How were they to get it? How was the instruction to be provided?—By an instructor.

12724. Purely with, or without land attached?—Without land, although they have had a bit of land lately.

12725. Was there to be any practical instruction in agriculture?—No, not beyond this, that they would have the opportunity of going over an adjacent farm to see the operations, and have them explained to them by the instructor.

12726. You have explained your disagreement with one item here, and perhaps I may say that no school in England attempted on that scale has succeeded?—I am afraid I do not understand the question.

12727. What school of that kind has succeeded?—I am not quite sure of your question as to what is meant by disagreement. I do not think I have said that.

12728. You have described that one item here that Mr. Latham asked you about, and you said that it was not a recommendation of yours but of the Committee's?—Of what point do you speak?

12729. Mowing by scythe?—Yes, but that would not apply to an agricultural pupil.

12730. No, I meant only an analogy. But I mean in one's experience no school with an agricultural side, so called, succeeds, and can you tell me of any one that does?—I am not prepared at the present moment to do so.

12731. It is the recommendation of your Committee but you cannot tell me of one?—No, I cannot tell you, except that I quote from a report made to us by the Board of Agriculture Inspector. He says he considers the Beaminster school good, but I said I had not sufficient experience of Beaminster school to say whether it has been a success or not.

12732. My experience has been that there has been none because the one that succeeds is misnamed. Now, in your rough estimate of expenditure on horticulture, you account for £338?—I do not think it is so much as that, £137 I think I said.

12733. It is £338?—Where did you get those figures from, may I ask?

12734. In the Board of Agriculture Report it says, under horticulture: "Dorsetshire, £338"?—I am very sorry so much money has been squandered.

12735. You cannot tell me how it has been spent?—No, I cannot, except that the salary was, I think, £180 for horticulture.

12736. Perhaps in your county, as in so many others, a good deal goes in administration which is unnecessary, but in any case you are not, speaking officially, capable of telling me how much has been expended?—First of all, I cannot admit that that has been spent. The dairy instruction is £337, but the horticultural was £127, including expenses.

12737. But that is given in the official paper, unless I am reading it quite wrongly?—There must be some mistake somewhere.

12738. It does not much matter. The only point is in reference to your school gardening. You have felt a certain disinclination to approve of it hitherto?—The school gardening does not come out of our funds. It comes direct from the Board of Education as a grant.

12739. You do not add any money to it, do you?—

No, I think we get £29 or £30, and that comes direct from the Board of Education.

12740. You have not expended anything upon the training of teachers, have you?—No, nothing that I am aware of.

12741. When the map on that wall was drawn up, and also when these statistics were published in 1907, you were allied to Reading?—Yes.

12742. Why did you discontinue that?—Now I can scarcely answer that question, except by saying that we had no pupils to send.

12743. I will not press that particular question as to why you did that?—I think we gave a contribution of £73 a year, but perhaps you can correct me there if I am wrong. I am inclined to think we gave a contribution of £73 a year, for which we received certain statistics.

12744. It was £106?—No, we did not contribute so much as that, I think.

12745. Here it is certainly; Dorsetshire, £106, out of your £7,000. But it is immaterial to my question what you expended. But you did expend something, did you not?—We did, certainly.

12746. Have you had any connection with the school at Dauntsey?—I was not aware that we had, but I have found since that we have had connection with it, and sent pupils there.

12747. Have you any knowledge of the school at, Dauntsey?—Not any personal knowledge of it.

12748. One is of rather a different type from the other, and I wish you now to account for your dissociation from Reading?—By a comparison of the two schools?

12749. Yes, by a comparison of the two schools, and you cannot tell me?—No, I cannot. The one is more practical than the other.

12750. Lord Barnard has very kindly placed in my hands this publication, by which I see you contributed £400 a year to Reading, which is considerably more than my statistics. My statistics were £106, and you do not, know of any reason, speaking just as a practical man, and not as a witness here arguing the case, why you were dissatisfied with Reading?—I do not think we were dissatisfied. I think it was a question of funds. I think I said before that it was a question of finance.

12751. You got no benefit from it?—No, I would not say that. But then there were so many other things in education that it was as necessary to, as they considered, as spending on other subjects.

12752. When I find you disagree with me as to the grant on horticulture, which I find is down here at £388 and the dairying industry at £449, it is difficult to see exactly how you distribute that money beneficially for the county?—Of course if you have that authentic as to the £388, I must not contradict it, of course.

12753. Probably I have made a mistake here, but this is this year's return (*handing return to the Witness*)?—I should not think of looking at it if you state it.

12754. But I may have got the wrong county, or some mistake may be made?—I think our instructor is salaried at £127. Now this brings it to my recollection, and that is why we particularly objected to horticulture. One objection was that the travelling expenses came to such a large sum of money.

12755. I agree with you there. The cost of administration, the cost of transporting your lecturers, and the cost of maintaining your office, seriously hampers you?—That is where the money was spent. When you mentioned the subject first I was only thinking of his salary.

12756. Then I think my figures are right?—Yes. That is one of the objections which we had to horticulture—that the expense was so heavy in administration only.

12757. There was a different method to be found for the expenditure, and primarily do not you think the elementary school affords the best means of, so to say, initiating the child into nature?—That is my opinion.

12758. You think so?—I do think so.

12759. You think you would get a child who understands nature more, and whose powers of observation are developed more?—Yes.

12760. Whatever his sphere in life may be?—Yes, that is my idea.

12761. Now we come to this, that in Dorsetshire you have not yourself any grade for the agriculturist of higher type?—No, none.

Mr. C. B.
Stibbs.
—
2 July, 1907.
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12762. There are higher elementary schools, and those higher elementary schools can be established anywhere, giving at the same time for those who require them commercial or business instruction, and for those who require it agricultural instruction; and they take those boys from the age they leave the elementary school up to the age of 15 or 16. Now, do not you believe that schools of that type might help you to carry on your elementary school boys up to a certain point?—Not one iota, and I will tell you why, if I may give my reason for saying that.

12763. Yes, do so?—First of all, in the elementary school you would not get a parent who was in a position to support his son as an agriculturist or in any other of the higher classes of business, or he would not send him to an elementary school, but to a secondary school. Secondly, as to a boy who went to an elementary school because he could not afford to go to a secondary school, it would be throwing it away, because he would have no capital to invest in that branch of farming which he would be taught, supposing he could be taught.

12764. Your reasons are common reasons often urged; but the fact is that your secondary school with an agricultural side to it is educationally impossible. Your higher elementary school, which carries the boy on to 15, is in a position to combine agriculture with general education?—I do not think so.

12765. But it does where it exists?—I cannot agree with you.

12766. I know that, and you are quite right not to agree, but then you come to this, that that is a possibility which is eliminated from Dorsetshire? Now in Dorsetshire you are not far from Wiltshire, are you?—No, we border on it.

12767. You have got the Dauntsey School, available for your agricultural boys, existing there?—Yes.

12768. That is for those who wish to proceed up to the age of 16 or 17 in agriculture?—Yes.

12769. Those who want to proceed to the higher stage in agriculture you have Cirencester available for?—Yes. You are speaking now of secondary schools, are you?

12770. Yes. Dauntsey is a secondary school; only it is an agricultural and not a pure secondary school?—No.

12771. It is a school for the sons of farmers up to 16 or 17 years of age?—Yes.

12772. Then you have Cirencester, which will take you up to the position of the Professor of Agriculture, or the man of research, to the very highest type?—Yes.

12773. Now do not you think that if your three counties combined you would economise a good deal of money, and you would be able to bring a great deal more pressure to bear upon both the Board of Agriculture and upon the Government than you can do working in isolation? Each of you would be providing what the other has not got. We have not in Gloucestershire anything like Dauntsey. The very best boys at Dauntsey would come on to us, coming by scholarships. As to your best boys whom you have in these excellent itinerant classes, and so forth, it might be worth while for them to have a scholarship and go for a couple of years to Dauntsey. But you have nothing to send them to at present?—You have asked me

a question which requires too much consideration to answer right off on the spur of the moment, because there are a great many combinations which are not successful or practicable. It is too difficult a question for me to give an answer to straight off.

12774. Now will you look at the map and see how the three counties, Dorset, Wiltshire and Gloucestershire, might combine. They run in a straight line, and you have got excellent communication now from Dorset up to Gloucester, and you have got the intermediate school. You would have everything then. You would have your itinerant classes, your butter classes and your elementary gardens, and so forth, all going on in Dorset, and you would save all the expense of what I may call intermediate agricultural education, because you would get it at Dauntsey; and again for those whom you wished to appoint to the highest positions and so on, you would go on to Cirencester. I do not ask you to give me any answer, but that is a sort of idea to mark it by. You see on that map how England is marked with yellow and pink and blue, and brown, and green in Wales, and all those counties are co-operating and saving themselves, I may say, £6,000 a year by utilising each other for certain purposes. It is impossible, in fact, for every county to maintain a Dauntsey or for every county to maintain a Cirencester, and so on, and what one wants is a combination of counties which will enable these institutions with Government aid to be serving the whole of the particular area—some of your Dorset pupils coming up to us at Cirencester with scholarships and some of your Dorset pupils going up to Dauntsey with scholarships, and so on?—Would that not be curtailing the general advantage for the benefit of a few?

12775. No, I do not think so; you would find, as a matter of fact, I think, that it would not increase your expenditure upon agriculture one iota—at least, I am sure it would not?—If I understand it rightly, when I get home I will think this over. What I understand your theory to be is this, that instead of having any agricultural side to any secondary schools, you would send the boys wanting to learn agriculture straight to Dauntsey?

12776. Yes?—But there must be a limited number, I take it.

12777. Yes, that would be a matter for arrangement with you and Wiltshire?—Yes; and from there, if there were any boys of special ability, they would come on to Cirencester.

12778. That is the idea?—That is the idea, and there are lots of things I should like very much indeed to put before our Chairman and one or two others who are competent to assist me in the matter.

12779. I wish you would do so. Colonel Williams might help you with the idea. Is he on your Committee?—Yes, and I know him personally.

12780. You understand what I mean?—Yes, I do, and I can put it before some members of the Committee who feel interested in it.

12781. (By Lord Barnard.) You quite understand that any suggestions which have come from Mr. Medd come from him and not from the Committee?—I quite understand that.

Mr. CHRISTOPHER MIDDLETON called and examined.

12782. (By Lord Barnard.) You are honorary secretary of the Cleveland Chamber of Agriculture?—Yes.

12783. And I think you are a member of the Council of the Royal Agricultural Society?—Yes.

12784. And you have been very much mixed up with farming for many years?—More so than with education.

12785. Do you farm yourself?—I have farmed up till five years ago.

12786. In the North Riding?—In the North Riding all my life.

12787. Are you at present a member of the North Riding County Council?—No, I am not. I have never been on the County Council.

12788. I see you speak in your *précis* of this district and are you speaking principally for the North Riding or South Durham, or what?—Both the North Riding and South Durham.

12789. I should like before asking you any other questions, in order to prevent any misapprehension, to remind you of the terms of the reference to us, with which I daresay you are acquainted, because it seems to me you may have a little wandered from it in the first three paragraphs out of five in your *précis*. You refer to the education of the sons of farmers, but you will bear in mind that we have nothing whatever to do with the education of the sons of farmers unless they are going to be farmers?—I am speaking entirely of those who intend to be farmers.

12790. We are dealing with scientific and technical instruction in agriculture?—Any evidence I give is directed to the sons of smaller farmers who have not yet taken advantage of, or been able to take advantage of, the facilities already afforded.

12791. But our enquiry includes the sons of men who may not be farmers at all?—I quite grasp that. I do not restrict it to those merely who are the sons of farmers, but include anyone who intends to farm.

Mr. C.
Middleton.
—

Mr. C.
Middleton.

2 July, 1907.

12792. You are well acquainted, I daresay, with the facilities which already exist in the district, are you ?—I do not think there is any lack of facilities for the sons of men of any means at all. They can be educated. There is the North Eastern Counties School, for instance, which has an agricultural side.

12793. That is a secondary school with an agricultural side ?—Yes. Then, of course, there is the Armstrong College at Newcastle and the Leeds University.

12794. Are you familiar with Leeds and Newcastle, and do you often go to those places ?—I have been several times to both of them.

12795. And you have seen the work carried on there ?—Yes.

12796. And the experimental work at Cockle Park ?—Yes. I may say that very shortly I shall be organising a party of members of my Chamber to visit Cockle Park.

12797. Have you been there before ?—Not with a party from my own Chamber, but last year we took a party to the Yorkshire farm at Garforth.

12798. But you have been to Cockle Park ?—I have been to Cockle Park.

12799. Is it your experience that farmers appreciate those visits ?—Most decidedly.

12800. They are beginning to find out that they can get some advantage from them ?—Last year I took a party of 30 members of my Chamber to Garforth, and they were so much pleased that they asked me to arrange for a visit to Cockle Park this summer.

12801. We have had a good deal of information from those places, and I will not take you through them all except to ask you if you are personally acquainted with them ?—Yes.

12802. You have something to say, I think, upon education for the sons of smaller men who are farmers. On their leaving school, what do you say as to the facilities which exist for them ?—There are facilities both in Durham and Yorkshire. They may get exhibitions to go either to Leeds or to Newcastle, but as a rule I think those are generally taken by boys when they leave school. But I do not think that is the best age for them to have this instruction. Probably they will have to submit themselves to a qualifying examination before they get an exhibition, and possibly after working two or three years on the farm it may not be easy to pass such an examination, but I think this practical work would be a decided advantage before having the scientific training.

12803. I think I am right in saying that with the exception of some of the larger men, the farmers' sons in South Durham and North Yorkshire usually only go to the public elementary school, do they not ?—Yes, the smaller farmers' sons do.

12804. They do not often go to the secondary school ?—No. I know a few comparatively small farmers who send their boys to the North Eastern Counties School at Barnard Castle—men who can scarcely afford it, but they see the advantage, and strain a point to enable them to do so.

12805. That school provides an education at considerably less than cost price, does it not ?—I am aware of that.

12806. In consequence, firstly, of very large charitable foundations, and, secondly, because of the very munificent contributions made by the landowners of the three Northern counties ?—That is so.

12807. What would your suggestion be then for giving a better education for the young men of those humbler classes ?—I will take Leeds, in Yorkshire, first. They have a course of three years and they have also a two years' course, but I do not think there is a course specially adapted for those who can only spend one winter, and I think it would be a great advantage if a special course could be arranged by which those who can only spend one winter there shall have as much education given to them as is possible to get in the time. At present the course is adapted to be followed on by a second year's course ; and I believe also at Newcastle there is no particular course which is compressed into a single winter session.

12808. I think we have that, if you will pardon my saying so. We have a short winter session course ?—I know there is the six weeks' course, but what I want is the winter course of five months. The six weeks' course is scarcely sufficient.

12809. You want something more than that ?—Yes, I want something more than that.

12810. About five months, do you think ?—That is the

time taken up at Leeds, from the middle of October to the middle of March.

12811. How do you think those lads should go ? Should they get scholarships from their County Council to those courses ?—I do not see how else it could be arranged very well for them, except in that way.

12812. Perhaps you will agree with what several other witnesses have told us, that is, that not only must the lad have money enough to pay for his board and lodging while at Leeds or Newcastle, but you must to some extent compensate the father for the loss of his work during that period ?—No, I should not go so far as that. It is not reasonable. Unless the father is prepared to make some sacrifice, he cannot expect his son to be educated in that way.

12813. Then what do you think of the lectures ?—I have a very high opinion of the lectures, but possibly it may be because in Yorkshire we have been singularly fortunate in having a very practical lecturer. I do not want to mention names, but he is a man who possibly has not the academic qualifications that some men have, and with no letters after his name, but he is a man who has a thorough grasp of the subject, and is able to give lectures in such a practical way that he interests his clients. I know for a good many winters in my parish, when farming in Yorkshire, we organised a course of lectures, and we always made it a stipulation that these lectures must be given by a certain lecturer, and in fact as the course went on his class always maintained the interest to the end. In fact, more attended during the last months than the earlier ones. People joined on. I cannot speak too highly of the good result that ensued to the young farmers who attended his classes.

12814. Have you had any experience of experimental plots ?—No. I have seen them, but have not had anything to do with carrying them on.

12815. You have visited them ?—Yes.

12816. Do you think they are of value ?—Very great value indeed.

12817. Would you agree with the opinion that has been expressed that that experimental work should be carried on on a national system, that is to say, to some extent directed from a headquarters somewhere to prevent overlapping ?—I cannot say that I fell in with the proposition that was put forward by the Board of Agriculture some time ago, because I think it would have interfered with some very good work that is being done in different localities. Each locality knows its own needs best. I am in favour of there being some national system, but not that the whole should become nationalised.

12818. (*By Professor Middleton.*) What proposition was that, may I ask ?—It was one that came from the Board of Agriculture.

12819. (*By Lord Barnard.*) You are referring to the particular proposal for a national council of research ?—Yes.

12820. That is supposed to be a little outside the scope of our enquiry. We have had evidence on a great many other subjects, and I will just mention them in order that if you wish to express an opinion on them you may do so. There is the migratory dairy schools and dairy instruction ?—Yes, I know in my own district we have had migratory instruction in butter making. Of late years it has rather lost interest because so many people who went in for it have now gone in for milk selling, and it is not so necessary in the district in which I have always farmed.

12821. Then poultry keeping ?—Yes, we have had poultry lectures which were very well attended by the wives and daughters of farmers.

12822. Did they derive any pecuniary benefit ?—I think so.

12823. You think they got better prices ?—I am certain from the information they got they have got better results both in the way of getting a greater number of eggs and getting better fowls and better flesh producers. In every way they have benefited by them.

12824. Then as to farriery, have you any opinion on that subject ?—No, we have not tried that, but we have had veterinary lectures which were of very great value and very popular with the farmers.

12825. Then horticulture, is there much done in that way ?—I cannot say. I do not know that. I have never had anything to do with that.

12826. Yours is not a good gardening district, is it ?—No.

Mr. C.
Middleton.

2 July, 1907.

12827. The spring and early summer are too severe?—Horticulture has not been taken up anywhere round my district.

12828. Then there are the manual processes, that is to say, hedging and ditching and sheep shearing, and those sort of things. Have you had anything done in that direction?—No, but I should be glad to see some effort made in that direction, because I always feel that when the present generation of labourers has died out, I do not know how the skilled work of the farm is going to be done.

12829. A great many of them in your district are not very skilled now, are they?—That was one of my great difficulties when I gave up farming, and one of the reasons I put forward to prevent my boys from becoming farmers was because it was so difficult to get farm work done.

12830. All the more intelligent lads go into the ship yards and smelting works, and so on, do they not?—For the last fifteen years I was farming I never was able to get a boy at all. They went into offices. For a local reason they were able to get into the office of a very large firm in the district, and every boy made it his object in life to get to a stool in their office.

12831. But the result is rather disastrous for farming, is it not?—Very much so, I consider.

12832. Do you think anything can be done in the way of giving farm hands instruction?—I think the best way of doing that would be by giving prizes. That is being done to some extent in the way of giving prizes for hedge cutting and that kind of work already.

12833. Do you think the elements of veterinary science is a useful subject too?—Very useful indeed when given by practical men.

12834. Then there is bee keeping, and perhaps to a small extent fruit growing?—It might be useful.

12835. Bee keeping is a considerable industry of course?—Yes, and I suppose it is profitable.

12836. Then there are school gardens. Have any of the schools in your part of the country gardens?—I do not know any that have gardens attached to them.

12837. Then, winding up this very long list, I will ask you your opinion as to the funds that can be provided to carry on all this work. You know farmers and land-owners pretty well?—Yes.

12838. You know, then, that it is almost impossible to expect that funds in any substantial amount can be obtained from those sources?—Yes, I do not see how you can get very much more from them. I fancy farmers are right in saying that they contribute so much to the cost of education that they should participate to a greater extent than they have done in the benefits to be derived from it, but I do not quite see how that is to be brought about.

12839. You think the State ought to do more for the agricultural industry in the way of providing information and instruction than it does?—I would go a little further than that and say that education is a national object, and to a very great extent should be paid for out of national funds. But I am afraid the day is far distant when that will be done.

12840. But I am rather keeping the question of education in that respect in the background. I am referring to what I might more properly call instruction than education, that is to say, the obtaining and diffusion of all knowledge which is useful in the technical processes of agriculture?—It will have to be done through the County Councils to a great extent.

12841. You have told us you are not on the County Council, but we have been told, and perhaps you have heard it, and I know it is so in the North Riding, that the County Councils are at their wits' end how to manage with the money at their disposal for educational purposes and how to find it sufficient?—I think the North Riding County Council are rather chary in their expenditure. They might be a little more liberal I think.

12842. But still you would not get any substantial sum from the North Riding, would you?—No, I do not think so.

12843. In fact you look upon it as the duty of the State?—Yes, I think so, and probably the grant from the Board of Agriculture for that purpose ought to be very largely increased, and I think probably it would be best if the funds came through them.

12844. Many witnesses have suggested that although they might, of course, have a certain voice in controlling the funds which they obtain, yet that the actual work should be done by the County Councils. That would be

your opinion, I think?—Yes. It must be done locally. It can scarcely be carried on from a head office.

12845. Then on a topic which is properly speaking, like research, outside the scope of our enquiry, that is, the subject of elementary education, you have put a note here in your *précis* on that, and will you give us your opinion on that?—I should like to see the boys in rural districts have the chance of learning nature study and other things, which would probably induce many to stay on the land. If they were interested in these subjects before leaving school they might stay on the land, but I am sorry to say that the education which is given in many elementary schools is such as to give them an entire distaste for country life, and I am afraid many of the teachers rather encourage the distaste for country life.

12846. Are there any other subjects you would like to mention. You have not mentioned the subject of forestry, have you?—No, I have not sufficient acquaintance with that subject.

12847. (By Professor Middleton.) Your opinion is that the colleges do not provide the exact course that is required for the sons of small farmers in the North of England, is it?—No, I do not think they do. I think the course is more adapted to those who have large farms, or who are going to take up instruction work, or land agency.

12848. Your complaint is that on the one hand the course provided for the small farmer is too short?—The six weeks' course is too short.

12849. And that the other courses are too elaborate?—Yes.

12850. Your suggestion is that there should be a single course extending over the winter of five months?—Yes.

12851. Have you thought at all what that course should consist of? Would you make a selection of classes out of those which already exist, or would you like to have a specially constructed course?—If it could be arranged, I think I should have a specially constructed course.

12852. There comes in the difficulty, that all the colleges are willing to offer a selection of classes, and any of them would permit the students to come for the five winter months to a selected group of classes, but those selections are not very popular with students and they are not very well adapted for the students' purposes. In order to get a five months' course of the type that he really wants you would have to have a specially constructed course?—Yes, I think it would have to be a specially constructed course to answer the purpose.

12853. Then that means, of course, fresh classes?—Yes.

12854. In every one of the subjects?—Yes.

12855. And a great difficulty is that the teachers cannot find time for so many separate classes, and so it is impossible to work the new classes into the timetable?—My hope would be that they would be attended in such numbers that fresh instructors would have to be arranged for.

12856. To make it worth while taking it up?—Yes.

12857. The farmers' son would need to show some greater keenness for education before that time comes. He is not at present going to the college in such numbers as to warrant that?—That is so. The farmers up to now have not availed themselves to the extent that they should have done of existing facilities, but possibly for one thing it is not made sufficiently known, and some of those who do realise the advantages of it think that the course is too long and that the course is not adapted quite to their requirements.

12858. I think I may say that all the institutions that have tried the short course would be willing to develop that short course if they could get the students to come back in numbers. They have tried it in certain institutions. At Newcastle I think they have. They had 20 only, but that is not at all a satisfactory number. If you asked the best out of those 20 to come back, or if you enquired how many would come back, perhaps not more than five would be willing to return?—Their fathers, perhaps, would keep them back. It is probable the fault is with them.

12859. From my knowledge of the subject, I should say the colleges are ready to provide that course that you ask for, but that they cannot get a sufficient number of pupils to warrant them in providing it?—I do not know whether all the exhibitions offered by the North Riding County Council are taken up. I scarcely think they are, and it is scarcely sufficiently known. Many farmers do not know, I am certain, that these exhibitions are available.

Mr. C.
Middleton.
—
2 July, 1907.
—

12860. Then in reference to one remark you made in reply to Lord Barnard. You gave a very decided opinion that there should be nothing given in the way of compensation to the farmer for the loss of the time of his son?—Most decidedly.

12861. Would you not agree that, on the contrary, the father ought to pay at least something?—I should say it does cost a little already. The tuition fees are paid, and there is a contribution towards the cost of board and lodging, but I do not know whether it quite covers the expense. I should say it does involve a small pecuniary sacrifice on the father's part.

12862. Do you not think in the long run the education might be more popular if it involved some little struggle on the part of the parents?—To some extent, perhaps—I do not say that I would press to have it absolutely free, but it should cost very little to the parent.

12863. Would you justify expenditure on agricultural education because of the large sum which agriculture contributes to the rates?—I think that gives them a fair claim on the public purse. May I just say one thing further? During the examination of the previous witness I rather gathered that the feeling of the Committee was against secondary schools having an agricultural side to them.

12864. (*By Lord Barnard.*) No, I do not think you must go so far as that. The feeling of the Committee, I think, is that we have never had any absolute proof of its being a great success before us. We want very much to hear of a case where it has been a success?—Take the case of the North Eastern Counties School. It has not been the success one would have imagined it would have been but the boys who have not the opportunity of going on to an agricultural college have got some useful instruction there.

12865. I quite agree, but at the same time for some years past the Governors have had to consider whether that side could be carried on, and it is doubtful as to its continuance. But after all, that is only one case, and we should like to know if there are others. We should like to see that extended instead of restricting it?—I have been rather surprised and disappointed that more boys at the school are not on the agricultural side, especially as many of them are not able to go on to the college afterwards.

12866. (*By Mr. Latham.*) I think you made the remark just now that you thought if boys could go for two or three years back on the farm before they got this extra education it would be an advantage?—I think they would be better fitted to get the full benefit from the technical teaching after they have had some practical training.

12867. But on the other hand, do you not think the very fact of being in the open air and on the farm would lessen their keenness for this technical college?—Not if they were the right kind of boys.

12868. Then as to these short courses of five and six months, were they for boys from the elementary schools or from the secondary schools?—For any boy who was going to make farming his occupation.

12869. How were they to get these courses?—I suppose the County Council would have to give exhibitions to them, as they do now, as to a certain number, but they would have to give a greater number.

12870. Then you made the remark that you thought these exhibitions and scholarships were very badly known?—Yes, they are not generally known amongst farmers.

12871. They are not advertised by the authorities, are they?—I believe they are advertised, but many farmers have never seen them and do not know of their existence.

12872. It has been suggested in this room several times that agricultural committees in counties would be of very great value if they worked in connection with the County Councils. Do you think they would be of that advantage?—They might make known to the farmers each in their own district what facilities were open to them.

12873. But would not in all probability the wants of the farmer get better known if there were such things as agricultural committees?—I think so. I think they might be of great advantage.

12874. With regard to the paragraph at the bottom of your proof, which I very much agree with, I should very much like you to state shortly how you think it possible under the present circumstances that any more money could get into the hands of agricultural educationalists?—The Treasury is very difficult to get money from.

12875. But would your answer be that it would be a valuable thing for us to press the Treasury to try and get

more money?—I think if the Board of Agriculture were to press for it it would be better.

12876. But we are sitting here to assist the Board of Agriculture?—I hope, then, the report of your Committee will enable the Board to get an increased grant from the Treasury.

12877. That is what you mean here?—Yes. Some counties might do more than they do. I understand a good deal of the "whisky money" is not devoted to that which it might be, and which is intended for technical education, but part is going to relieve the rates instead of being spent as it was intended to be spent.

12878. We might take it for granted that there is a great deal of the "whisky money" at the present moment going to relieve the rates, because it is being allocated to secondary education through the Act of 1902. The ordinary evidence we have got generally is that County Councils are drawing back from agricultural education in consequence of the "whisky money" going to the rates indirectly. Witnesses think it does not go directly, because the rates would be very much increased if the "whisky money" was given for agricultural education. Then, again, your remark here applies very forcibly?—I understand there is a great difference in counties. Some counties do allocate a proper proportion to technical education, and others do not. Practically it nearly all goes to the relief of the rates.

12879. Then it would be very much better if the Board of Agriculture could have more power over this money that is now supposed to be used for agricultural education?—Yes, I think it would be an advantage if the Board of Agriculture could see that this money is devoted to the purpose for which it was intended.

12880. Do you not think agricultural teaching would be better for the agricultural interest if it was entirely in the hands of the Board of Agriculture?—I do not know that. I should scarcely be prepared to go so far as that, because certain districts have organised themselves well, and I do not know that there would be much improvement by them being controlled by the Board.

12881. But the very fact of this quinquennial division must help you in your answer?—I suppose the Board in those instances in which they make a grant directly or indirectly do have some control of some sort. I suppose that would be a condition of the grant, that they shall comply with certain conditions.

12882. We may fairly take it that you consider the amount of money which the Board of Agriculture has to use for the benefit of agriculture is much too small?—Very much too small.

12883. (*By Mr. Medd.*) Are you not a member of the Education Committee of the Royal Agricultural Society?—No, I am not on that committee.

12884. You know that that Committee, of course, has its educational exhibition annually?—Yes.

12885. Then do you not think that the organisation of that show might be better if it were entirely in the hands of the Committee of the Royal than distributed over a number of different societies?—I think the show depends on the co-operation of different societies.

12886. Yes, they can co-operate with and under you, but it seems to me that when we have the County Councils' Association and the Agricultural Education Association and so forth, there is a liability to have overlapping and waste of effort and loss of prestige, and that if you undertook it with our co-operation, the position would be improved?—I am afraid the Committee would scarcely be willing to take the whole of the responsibility upon themselves.

12887. That is what Lord Moreton says?—I am very much of that opinion.

12888. It is a question of increased responsibility on your part?—Yes. The Society is responsible for a certain proportion of that. From Woburn there is a certain amount comes, and I think it is more to their interest in the way it is done now—with the co-operation of various other bodies.

12889. You speak with far greater knowledge of the practice than I do, but I should have thought from what I have seen of the shows that there was a certain amount of dislocation and a certain overlapping, and that there was a waste of money, so to say, in bringing to the show similar examples of various types, but that is a matter of opinion?—I think it is better to have a little overlapping, otherwise there would be a good deal of omissions if it was left entirely to one.

Mr. C.
Middleton.
—
2 July, 1907.
—

12890. If you are content to go on with the trouble of it all, well and good. Now in regard to your own county, is that Yorkshire?—Yorkshire and South Durham. I am living in South Durham now.

12891. In regard to Yorkshire, have you any knowledge of the work done at Beverley in their meetings and so on?—No, that is the East Riding.

12892. That would not come within your sphere of operations?—No.

12893. (*By Lord Barnard.*) One question arising out of some of Mr. Medd's questions. One member of the Committee here has expressed a very strong opinion that what are known as agricultural societies ought to do a great deal more for agriculture than merely organise a show. Do you think that anything more could be done through them?—There are very few agricultural societies which could or would do very much, I am afraid.

12894. They practically are not agricultural societies at all, are they?—They are more show societies.

12895. They are managing committees of the show?—Their sole object is their annual show and they do not exist really for any other purpose.

12896. You think they could not be made useful for any other purpose, do you?—I think county agricultural societies might be made more useful, but I do not think the district ones want to. The county ones might if they were willing.

12897. I know the good work done by the Darlington and Stockton and Cleveland Chambers of Agriculture, and might not some of these societies on a much smaller scale produce similar work?—It always seems to me, like two societies doing the same work in a district, and I think, perhaps, it is well that chambers of agriculture should stick to their own work and not take up the province of others.

12898. (*By Mr. Medd.*) Then, if I may make the remark, is not that exactly what I advocate in regard to the Royal Agricultural Society and its control over its own educational section?—But would not that involve leaving in their hands the whole preparation, which is excessive?

12899. No, I do not think so, but the difficulty is that taking the present area, a great number of societies apply to possible exhibitors, and it is a great deal a question of prestige as to which they will go to and so on, and what I want to see is what you may call a quinquennial exhibit of an area. You are moving about and next year you will be at Newcastle, and then I would have what Newcastle has to show, and if it comes south, what they have to show there. Take this year at Lincoln. Cambridge flatly refuses to show a thing because they showed somewhere else, and from the point of view of farming and the

elementary teaching point, have you more to show than any other county? That is the difficulty that arises, and could your Committee not alter it?—It has become a very interesting feature of the Royal Show, and I should be sorry to do anything to risk lessening it.

12900. I know it has done excellently. The only thing is the fear of local overlapping?—I believe in letting well alone. I think it is fairly satisfactory at present.

12901. You do still draw from a wide area. The difficulty is that you are now attempting to draw from areas from which other competing societies draw?—It is quite voluntary on their part, and we cannot compel them.

12902. But if the Royal Agricultural Society had the prestige of being the chief quinquennial exhibitor of the kind in a given area, it would receive from that area all the best exhibits?—I do not know about that.

12902a. (*By Mr. Latham.*) You know that there was a very scientific exhibition at the Royal Agricultural Society the last two years?—Yes, for about four years, I think it is.

12903. There is a very great interest taken in it?—Yes.

12904. Would it be possible for your Society to try and institute lectures on these different exhibits, to young farmers particularly: because I do not think you need be aggrieved by my making use of the expression that they are quite ignorant of the nature of the exhibition?—That would rather exclude people coming into the show and seeing all there was to be seen, and I do not think that that is practicable. It would require a very much larger space, because it is generally crowded as it is.

12905. Does not that show the necessity of your going further than you do go?—I do not see it. I do not know whether you would get space enough to make it worth while having lectures. Certainly hundreds would want to attend them.

12906. Has it ever struck you as a Society that it would be worth while making a small charge to admit people now?—I think there would be an objection to there being any further payment to make when you once have got inside.

12907. But, still, there is a very great deal in this scientific exhibition which is very much misconstrued, and not at all understood by agriculturists generally?—I will consider that point, and if I come round to your way of thinking I will bring it forward at the Council. I will consider it, but it has never occurred to me yet, and I would not like to form an opinion without full consideration.

12908. You said you would be very fond of letting well alone, but you would not object to improving well?—Not if I was sure it was an improvement.

Mr. ALBERT WHEATLEY, F.R.C.V.S., called and examined.

12909. (*By Lord Barnard.*) You are a Fellow of the Royal College of Veterinary Surgeons?—Yes.

12910. I have not got a note of your evidence?—No, I have not sent in one.

12911. You know the reference to this Committee?—Yes.

12912. Have you any views or information on that subject which you would wish to communicate to us?—Only in reference to shoeing smiths.

12913. That is a most important subject?—It is the only one I have any knowledge of.

12914. Perhaps you will give us your views on that particular point?—I think I may say shortly my idea is that a handicraft can only be taught by manipulation, by showing the man what he ought to do and correcting his errors if he has any to correct.

12915. Efforts are being made, are not they, to do that in various counties?—Certainly.

12916. Are you engaged yourself in work of that description?—No, but I did have a fair experience in it.

12917. In which county?—In Berkshire.

12918. (*By Mr. Latham.*) May I ask you kindly to give us some of the knowledge that I know you to possess as to the time we began?—It was started with a shoeing van

and an instructor. The van went from centre to centre, and the length of stay it made at each centre depended upon the number of pupils.

12919. (*By Lord Barnard.*) Did it attract the men?—Certainly.

12920. And, naturally, if they found that they got advantage from it others would come to it?—That is so, and they did do so.

12921. Speaking from your own experience, has horse shoeing improved since the introduction of that system?—Certainly.

12922. Do you think the van should be kept going?—I do, for the simple reason that there is no apprenticeship now, or very little.

12923. That was supported by the County Council, I believe?—Yes.

12924. (*By Mr. Latham.*) When the shoeing classes were first started in Berkshire, that was the first of the kind in England?—I believe it was.

12925. You have possibly before, and certainly since that, been continually judging, so to speak, at county shows?—Yes.

12926. And from your experience, do you tell the Committee that the improvement in the shoeing of horses generally has been very marked?—Certainly.

Mr. A.
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2 July, 1907.
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12927. Now with regard to the registration of all these smiths—has this teaching led to a better class of men taking it up?—Yes, I think so.

12928. I suppose I may say very shortly you would wish to see this thing continued?—Yes, I should wish to see it continued certainly.

12929. The different members of the profession are, I suppose, quite as well aware as you are of the yeoman service this undertaking has been to the cause of horse shoeing?—I think so.

12930. Now, with regard to young smiths, has there ever been any difficulty in getting the young smiths to come to the forge?—No, I do not think so. I have never experienced any difficulty.

12931. Then if there was any difficulty the difficulty was with the older men?—Certainly.

12932. But that has been got over?—I think so.

12933. Now I will go on and ask you whether you think there is any public money that could be better spent by the County Councils than has been spent on this undertaking?—I do not know what they spent, but I know it was very well spent in Berkshire. I am sure of that.

12934. But your experience as a judge must show that Berkshire has not been alone?—Generally it has been so.

12935. It is quite rare now to find the bad shoeing of 20 years ago, is it not?—Certainly.

12936. Not only have these young men been taught how to shoe better, but they know a great deal more of the anatomy of the horse's foot than they ever could have done if this had not taken place?—That is so.

12937. (*By Mr. Medd.*) By whom are you employed?—By the Berkshire County Council.

12938. Do the Berkshire County Council pay you a fee?—No.

12939. Have you met with any objection on the part of veterinary surgeons to the instruction given under the County Council's auspices?—No, not any in reference to farriery.

12940. No professional objection?—No, not in reference to farriery—by that, I mean shoeing.

12941. I may take it that the veterinary surgeons of Berkshire and other places have been very pleased that such instruction has been available?—Yes, they have.

12942. What class of people attended as a rule? Were they farm lads engaged on farms?—They were shoeing smiths, really.

12943. I quite understand that a veterinary surgeon might object to instruction given under any of his branches?—Certainly.

12944. You have found that by qualifying your students in Berkshire in farriery you have strengthened your claim upon the Board of Agriculture?—Certainly.

12945. You have been doing, in other words, what I may term necessary farm work?—Certainly, very necessary.

12946. And the more it is done the more the animal improves, not only in health but in work?—Certainly.

12947. (*By Mr. Latham.*) Prior to the time when we took up this teaching there had been very little teaching in farriery work at all?—I think that is so. I do not know of any.

12948. It is almost a wonder how the successive smiths carried on their occupation?—Certainly.

12949. In answer to a question Mr. Medd put to you you said, in effect, not only did it benefit agriculturists generally, but the world at large—that is the teaching that has been given to the shoeing smiths?—Yes.

12950. And that applies to all commercial trades and the army, and in every instance in which horses are used?—Certainly.

TWENTY-FIFTH DAY.

Wednesday, 3rd July, 1907.

PRESENT :

{ The Lord BARNARD (*in the Chair*).

The Lord BELPER.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. H. TRUSTRAM EVE, called and examined.

Mr. H. T.
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3 July, 1907.
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12951. (*By Lord Barnard.*) You are at present Secretary of the Farmers' Club?—Yes.

12952. How long have you held that appointment?—Since June, 1905.

12953. Prior to that you were Secretary to the Bedfordshire Chamber of Agriculture?—Yes. I helped to start that.

12954. By profession you are a land agent and rating surveyor?—Yes.

12955. You have been acquainted with farmers and farming all your life?—Yes.

12956. Have you farmed yourself?—Yes.

12957. Are you farming now?—No.

12958. Have you farmed in Bedfordshire?—Yes.

12959. Do you come of a farming family?—Yes, my grandfather was nothing but a farmer; my father was a farmer, and then developed into a surveyor.

12960. The Farmers' Club was started by some members of the Royal Agricultural Society and of the Smithfield Club in 1842?—Yes.

12961. Since you have been the Secretary of that Club, the membership has increased very considerably, I think?—That was just before I was Secretary. That was when Mr. Druce was Secretary.

12962. You have members in nearly every county in England?—Yes. We have members in nearly every county in this country and also in Ireland and Scotland.

12963. The object of the Club is to discuss matters of importance affecting agriculture?—Yes.

12964. Are your meetings well attended?—Yes; we get a very good attendance; it is a strictly non-political club.

12965. Papers are read and discussions follow?—Yes.

12966. Those papers and discussions are afterwards printed and circulated?—Yes, to each member and to the press.

12967. One of the rules, you tell us in your *précis*, is that at least three-fourths of the members must be connected with agriculture?—Yes, that is a very important point.

12968. Of course, people connected with agriculture include a great many others besides actual farmers: land-owners, for instance, such as I am myself, and valuers and estate agents and so on?—Yes.

12969. You are an examiner for the National Diploma?—I am.

12970. You act as agent, amongst other properties, for a large number of small properties, I see?—Yes.

12971. You are in daily contact with farmers as a tenant right valuer?—As a rating surveyor I have come across farmers to a large extent, particularly by making a field to field valuation of over 500,000 acres of agricultural land.

12972. You have had many opportunities of ascertaining the needs of farmers with regard to the subject of agricultural education?—Yes. In a small way I have worked for the interest of agriculture all my life.

12973. Will you tell us how the Farmers' Club came to consider this question as they did recently?—In October, 1906, when the sessional programme for 1907 was being considered, the committee thought that one of the most pressing subjects was the agricultural education of farmers' sons and we selected that as one of the subjects to be discussed. We asked Mr. A. D. Hall, of Rothamsted, to prepare and read us a paper on the subject, which he did on April 29th. Curiously enough, the appointment of the Departmental Committee was announced a few days before that date, so it happened to fit in very well.

12974. That paper was very fully discussed, I think?—Yes.

12975. You have told us that you are well acquainted with the views of the farmers on this as well as on other subjects. What is their opinion on the subject of agricultural education now?—I am afraid they have never been satisfied with it. Whether they ever will be I do not know, but at present I am afraid there is a feeling of dissatisfaction and that this Committee is wanted, and that farmers are looking forward to your report with great interest, and hope that some improvement will be made.

12976. Can you indicate at all the lines of that dissatisfaction—the grounds on which they are dissatisfied?—That is a very difficult question, but I think it is mainly wrapped up in various parts of England in this, that they want the right man to instruct them. I think really that is the most important point in my evidence.

12977. Do you think that possibly they are under some slight misapprehension on that point?—I think many are.

12978. It would be a very great thing, in fact, to continue informing the farmer on what is being done; he really does not know sufficient at present to appreciate it?—I do not think I could agree with that.

12979. We asked a witness the other day, who expressed very much the same opinion as you do when you say farmers consider that the right men are not found. I asked that witness if he could tell me, without giving names, of course, of an instance of a wrong man being appointed and he said frankly, when he came to think of it, he could not. I should like to ask you that same question: do you know instances of men not being suitable?—Yes. In confidence I could give instances of two or three who are absolutely unsuitable, and who have done more harm than good. On the other hand I should like to say that there are many men, and men that I know, who are doing absolutely good work. It is simply a question: Have they or have they not the confidence of the farmers in the county; if they have not, they are doing more harm than good. What happens is this: a young fellow goes straight from a college into a county as an agricultural instructor, and in the course of conversation, or in the course of a lecture, he makes a slip of a practical nature and his influence is gone for the next two years. That young fellow must have time to get the practice into his head and when he has once got it, there

is no body of men who will listen more eagerly or who are more desirous of profiting by teaching than farmers; they are very anxious to learn.

12980. Are you acquainted with the previous history of these county lecturers?—Yes. I think I know where they emanate from, and so on.

12981. Do you know as a fact, that nearly all of them are the sons of practical farmers and have worked on farms themselves? One gentleman that we had here told us that he had worked upon a farm until he was 24 years of age?—I should think that that was not the fact—I do not mean in that individual case; I mean as a general thing.

12982. Quite so. I do not wish to confine you to individual cases; I only instanced that one case. I know farmers do say that these lecturers are not practical men, but we have examined a great many of them and nearly every one of them that we have had before us has been brought up on a farm. Before we leave the subject of teachers, do you think that these men are unsuitable in some cases because they are not perhaps well qualified to instruct others or to convey the information which they themselves possess to others?—Yes, I think that is a fault not only in agricultural instructors but also in public schoolmasters, that they have not been taught to teach. Where you get an elementary schoolmaster he very often teaches much better than a public schoolmaster for the simple reason that he has been taught to teach.

12983. Would that point to the great desirability of selecting lecturers more on the ground of their capacity to make friends of the farmers, and being able to convey the information they possess to the farmers rather than on the ground of their individual attainments?—I am afraid that is so. If I were headmaster of a public school, I would rather have a man who could teach and keep order than a senior wrangler who could not.

12984. On the subject of agricultural colleges, you would like to give us your opinion?—I am very much in favour of them. I think they are being run by a wonderfully practical set of good men, but taking into consideration the whole question of agricultural education, and speaking of the farmer, I do not think that, directly, they deal with more than 5 per cent. of the farmers in England.

12985. You began by informing us that there are a great many men, yourself included, connected with agriculture, who are not farmers?—I think that some of these colleges give an excellent training for young land agents, and they directly come in contact with farmers, but not as teachers.

12986. They ought to have a good training. I think perhaps I ought to point out to you that we do not limit our enquiry to farmers' sons. We are here to enquire into the facilities which exist for providing technical and scientific instruction in agriculture. Some farmers' sons would not want that at all because they are not going to farm perhaps, and on the other hand, other men who are intending to take up other duties in connection with agriculture are not farmers at all, so that we must not limit it to farmers' sons, although, no doubt, the bulk of present-day farmers are farmers' sons?—I do not think the State need worry about those people who have sufficient means to see that their sons are properly trained to fit them for the post of land agents, and so on; they will learn farming somehow or somewhere, and I do not think it wants a Departmental Committee to see after them. The man I am worrying about is the ordinary farmer; something wants doing for him.

12987. Yes, but these colleges do not exist exclusively for the benefit of the farmer's son. You have mentioned land agents, but I could name many other professions; foresters, for instance, one of the most important items at the present day in the history of land, and agricultural chemists, and you might say manure merchants and seed merchants, who all obtain information and instruction at colleges which will be very useful to them in their businesses?—I agree, but another way is to article a boy to a manure merchant or a chemist, or a forester on a big estate, and you would get the same result.

12988. Would you agree with me from a national point of view that it is desirable to level up the general knowledge on all these subjects and that that can be best done by means of these agricultural colleges?—Yes. I am of opinion that agricultural colleges are an absolute necessity.

12989. For instance, with regard to research work, that is a question which is really outside the scope of this Committee, but we have not been able entirely to exclude it?—Yes, research work is absolutely important.

12990. You value research work, I am sure?—Absolutely. Farmers do not to a large extent admit the value

Mr. H. T.
Etc.

3 July, 1907.

Mr. H. T.
Eve.

3 July, 1907.

of it, but agriculture to-day would be absolutely impossible unless we had people carrying out research.

12991. (*By Mr. Latham.*) Is not that because it has not been brought before the notice of the farmers?—Exactly. That is why I want these good agricultural instructors to take things that have been scientifically proved, and practically proved in a small way, to the farmers and say: "Now I have got something here that is going to do you good."

12992. (*By Lord Barnard.*) That comes within the scope of our Committee, although, naturally, it does not apply to you so much. I may tell you we have had information from two Universities who are taking up this subject of research and who do not propose to teach anybody; they propose to do laboratory work and research work only, you admit the importance of that?—To a tremendous degree, but I think with regard to all this research and experimental work when it is done it seems to me that it does not get aggregated in a form that the farmer can use at present.

12993. The great need is really to distribute and diffuse information which is being obtained by these colleges in a way that will inspire confidence amongst the farmers. That should be done largely, you think, by a judicious selection of lecturers?—I want to get one good man of a certain age with, say, a county as a unit, who would have almost nothing else to think of. At the present time the head agricultural instructor, whatever you call him, in a county has got such a lot to do in looking after different things and getting-up and preparing his lectures and one thing and another, that his mind is not on the individual instruction of the farmer.

12994. That would involve an increase of staff, would it not?—I am afraid so.

12995. And consequently increased expenditure?—I am afraid so.

12996. You have been a member of the Agricultural Sub-Committee of the Bedfordshire County Council?—Yes. I served on the Agricultural Sub-Committee for some years.

12997. You know the extreme difficulties which are experienced in all counties in increasing the funds which are allocated to agricultural education, and that in fact in some counties there is a tendency to decrease the expenditure in consequence of the heavy demands upon the County Councils for other education?—I think the way some County Councils have treated agricultural education is absolutely disgraceful. There is no other word for it, and upon this financial question I am sorry to say that every day it is getting worse. Since secondary education got on the rates, I can quite see that agricultural education is being put more and more on one side and the farmer is a bigger sinner than anyone on this question in the County Council. He has such a horror of higher rates—with which I sympathise—that he will cut down anything to save the rates, and the first thing that goes, in my experience unfortunately, now is agricultural education, and that is a most serious thing. For the next few years as secondary education goes up agricultural education expenditure will go down, and it wants a strong hand from up above to stop it.

12998. You have laid down two propositions with both of which I quite agree. One is the absolute necessity of increasing this work, and the other the certainty of the impossibility of doing it under present circumstances. What is your remedy for that?—I think there must be a little more control of the County Councils than there has been in the past and I think it might be done in a mutual way. If a county showed any disposition to spend money on agricultural education—and I admit they must have a voice in it because they know the needs of the county—I think they might be backed up with, say, a similar amount from the Imperial funds, but I do not believe in Imperial funds and local control. I think if a county said: "We are disposed to spend £2,000 a year on agricultural education," that they would be more likely to spend it if they found they were going to get £2,000 a year from the State.

12999. Perhaps you will agree with me then, that under those circumstances, the State should have a certain amount of control and direction over what the county is doing if they are going to contribute a considerable sum of money to it?—Certainly, and in my experience the initiative we have had from the inspectors of the Board of Agriculture, has been most valuable in the past and it is most necessary that it should be continued.

13000. You are aware that the staff is more or less exiguous?—As far as my knowledge of them in the past

is concerned it has only been of Mr. Brooke-Hunt. In the counties we live in somewhat a narrow way, and we have only the knowledge that we gather in that particular county, and one man engaged by the State in going round from county to county must know more than we do, and though we might have a voice in 50 per cent. of what we want to do, surely his ideas with regard to the other 50 per cent. must be extremely valuable.

13001. There has been a suggestion made, I do not know whether you have heard of it, that this work should be under the control and direction of the Board of Agriculture, and there should be some kind of Consultative Committee or Council seated in London to advise the President of the Board of Agriculture on such subjects, consisting of members drawn from all parts of the country. Do you think such a scheme would be practicable?—Very pretty, and very ornamental, and very complimentary to the country: but really I think the Board of Agriculture knows quite enough of the agricultural needs of the country without consulting a committee such as you describe; and I for one am quite prepared to trust them.

13002. Might not it be an advantage to the central officials to get advice and opinions from all parts of the country?—Perhaps I am wrong, but I am not a great believer in these committees. I am much more a believer in a man going about and getting information where he wants it, on the quiet.

13003. (*By Mr. Latham.*) If the central committee were in unison with all these local bodies, would you not be much more likely to get the money that you require?—If there was any moral effect in the Committee it would not do any harm, but the direct question to me was, would it be of any use to the officials of the Board of Agriculture?

13004. We want it the other way up?—From the financial and moral point of view it might do good; but my point was that I did not think the Board of Agriculture officials required any information from a general committee.

13005. (*By Lord Barnard.*) You think the Board of Agriculture is the best public Department to deal with this subject?—Yes, no doubt; it could not be better. The Board of Agriculture has gained the confidence of the farmers in the last few years, as I tell them, by being the Board for Agriculture instead of the Board of Agriculture, and they have gained the farmers' confidence in another way also, that is, by the issue of these leaflets. I have never heard any individual farmer who has been able to pull these leaflets to bits. They are correct, and farmers are very fond of them. The Board of Agriculture has gained the confidence of the farmers by showing them that they are a practical body.

13006. In your experience do those leaflets reach the hands of all who might have them and who might profit by them?—The answer to that is, it is their fault if they do not, but they do reach the homes of the farmers that are not in touch in any other way: I frequently see them lying on the tables of farmers, but I am sorry to say that more farmers ought to send postcards and ask for them.

13007. Do you know of any instances of farmers consulting county lecturers, and people of that sort, and asking for advice?—Yes.

13008. That is a valuable work also?—Very. We want to have a man in every county that we can consult.

13009. Perhaps you would go as far as to say that any work done, say by the university colleges, should be public property and belong to the Board of Agriculture and be distributed over the whole country—all the knowledge that is obtained?—Yes, but in my experience they are generally published.

13010. Quite so, but do they spread? For instance, in Bedfordshire, do you get the results of experiments which have been made in the North of England say, or in Wales?—We get them all somehow by post, but what is wanted is somebody to take hold of the whole thing and in an intelligent and short way put it into farmer's language and pick out the good from the bad. It does not want just a summary of it: it wants someone with a good name to write a short report on it for the farmer, and he will read that.

13011. I think at the present day it has become a great deal more the practice—at least I know it has in my part of the country—for well-instructed farmers to write short paragraphs or articles in their local newspapers: that is so, is it not?—Yes: I look upon the local newspaper as the best medium of reaching the farmer compared with any other way—they all read that.

Mr. H. T.
Eve.

3 July, 1907

13012. So that the more information you can get and the more you can diffuse it the more the farmer will appreciate it?—Yes, but I am rather frightened of diffusing all the energies of these various people in experiments and demonstrations, because some of it may do harm for the reason that we do not know on what sort of land the experiments were carried out.

13013. I should imagine any description would describe the nature of the soils exactly?—That is exactly what I say. I want it done by some good practical person before it goes to the farmer, otherwise it might do harm.

13014. (*By Mr. Latham.*) Will you tell me this, would not you welcome the idea of the Board of Agriculture receiving all this information and tabulating it and making a report on it?—Certainly.

13015. (*By Lord Barnard.*) Would you inform us what your views are as to the proper methods for educating budding agriculturists?—I think it is pretty much wrapped up in the general views I have given. It all depends on the individuality of this one man, and he must have a free hand.

13016. I thought perhaps you were going to say something about schools as distinct from colleges?—I am a great believer in agricultural institutes and colleges. My experience goes to show that short courses are the only things that will touch the bulk of farmers. There are certain farmers who send their sons to agricultural colleges and I am glad they do. Probably you have had statistics from the colleges as to what becomes of those men afterwards, whether they ever go back on to the land as ordinary farmers, but I very much doubt it.

13017. Some of them do?—Yes, some, but not a large proportion. I am a great believer in short courses for farmers—from five to ten weeks?—A boy goes to the first course, and if he is fitted for it and likes it he will go to another course, and then to another and he may drift on to something good eventually, but these short courses start them off in the line they ought to be.

13018. In a large number of cases farmers' sons, particularly small farmers' sons, go to an elementary school?—Yes.

13019. When they leave the elementary school, of course circumstances would differ in different cases, would you as a rule send them to a secondary school?—Yes.

13020. I am rather following out the lines which have been given us by a good many witnesses. Then the next absolute essential is that they should have at least two years' practical work on a farm?—Yes.

13021. And then go in for those short courses?—That is right—keep on educating himself by every means he can at night schools or anything, but he must do his practical work on the farm with his father.

13022. I do not know whether you know the Farm School at Basing or the Newton-Rigg Farm School in Cumberland?—No, I am afraid I do not, but I think very likely we have the same sort of thing at Ridgmont in Bedfordshire.

13022a. What is your opinion of the Ridgmont School?—Absolutely excellent now. You have heard a good deal of how it was started, no doubt, and all on wrong lines. It was for labourers' sons first of all, which is not wanted. I was honorary secretary of a committee of nine agriculturists, with Mr. Whitbread as chairman, that sat to consider what we could best do with the Agricultural Institute when it was admitted to be a failure for labourers' sons. We sat as a small committee, and heard witnesses and drew up a report as to what we thought ought to be done. After long consideration we came to the conclusion that it should be a place for short courses under a proper instructor. Before that time it was the fashion of a good many people in the county to sneer at Ridgmont, but their sneers have absolutely, or should have, died away through facts, and I consider Ridgmont an excellent place now in every way.

13023. It is not a very expensive school to the county, is it?—No.

13024. You think it would be a good thing if schools of that type were multiplied?—I think that is what we want.

13025. What is the present attitude of the farmers of the district towards Ridgmont?—They will not admit it, but a good many of them know that it is doing very good work. At the back of their minds they do not like it because it is costing something to the rates.

13026. You have given us a rather long list of subjects here?—Might I pick out two; Farriery and demonstration plots. I do not know much about the others. Farriery we have done a lot in in Bedfordshire, and I think it is

absolutely necessary that continuous instruction should go on year after year. I mean so many counties do it for two years or so, and then drop it. Young blacksmiths are always growing up like other people, and it wants continuous instruction and exhibitions and competitions, and I am a great believer in peripatetic instruction in farriery.

13027. In your experience has the result of farriery teaching been good?—It has absolutely improved the shoeing of the county. Everyone will admit in Bedfordshire, the people who keep hunters and everyone, that the type of shoeing has improved through the instruction given in farriery; there has been less pricking, and more understanding of the horse's hoof.

13028. Would you like to say a word on demonstration plots?—Yes. I have a great horror of the word "experiments," unless they are conducted by agricultural colleges or at such places as Rothamsted, or by someone who understands them. I am very fond of demonstrations, particularly roadside demonstrations, with a board up and the place at right angles to the public road, so that farmers can stop at any time when they are driving along in their dog-carts and see what is going on, or they can see the difference in colour. That, I think, is excellent.

13029. Have you anything more to say on these subjects?—No.

13030. Now would you like to say something on the subject of examinations?—Yes.

13031. What are your views on that?—I was one of the examiners for the Royal Agricultural Society before the Royal and the Highland amalgamated and formed the N.D.A. examination, and I have practically been examining on the subject of surveying and other subjects all my life, and up to that I was being examined myself. The examination at Leeds is on different lines from any other examination in England, because the examiners meet there, look over their papers in a room together, and discuss doubtful candidates at once, even before we do so officially with the Board when it meets to hear the results. A further safeguard is that the candidate is examined *in viva voce* a few hours after the examiner has seen that man's paper. In my experience there is no other examination in England that does that, and I think that is the best possible way of avoiding "cram" and for passing the right man. With regard to the different subjects, I have a general knowledge of a good many of them. I have read each paper on each subject each year, and I have an intimate acquaintance with the examiner in each subject, and how he looks over his papers, and we talk frankly and freely together for three days, and I do not know an examination where the papers are of a more practical nature. I do not see anything the matter with them. I know that many teachers of the candidates object that some of the papers do not contain the questions on the points which the teachers want to teach the candidates, but I think that opinion is dying out, and I was very much struck the other day when talking with one of the heads of the colleges about this point; he complained that the examination was not practical enough, which pleased me immensely, because I always thought that the agricultural colleges were of opinion that the examination was a little too practical and not enough professorial.

13031a

13032. At whose cost is the examination for the National Diploma carried out—by the two societies paying the expenses, is it?—Yes.

13033. Is there any fee to the examinee?—An honorarium to the examiner.

13034. Does the student who comes up for examination pay a fee?—He pays a small entrance fee.

13035. I will ask you this one general question upon it. Is it your opinion that this National Diploma examination should be continued?—Most decidedly.

13036. Are there any other points that occur to you?—I think page 7 of the *précis* is rather interesting as showing the six points which a Joint Committee of the Farmers' Club and the Central Chamber of Agriculture asked for in 1890, because anyone reading those recommendations will see how we have got on since then.

13037. Would you like to read them?—I think I should, because I do not think anything shows you better how agricultural education has got on during the last 17 years than can be shown by reading what farmers wanted 17 years ago. They are as follows:—

"(1) That there should be established and maintained at the cost of the State a Central Normal School of Agriculture.

"(2) That State aid should be liberally given to certain endowed and county schools, on condition of their

Mr. H. T.
Eve.

3 July, 1907.

establishing an agricultural side for the proper teaching of the theory and practice of agriculture, practical instruction being carried out on a farm which either be the property of a school, or rented by the school, or available by permission of neighbouring farmers. Arrangements should be made for the delivery of courses of lectures by the teaching staff for other lecturers open to farmers of the district.

"(3) That grants should continue to be given by the State in aid of local effort to provide technical instruction in dairy or other branches of farm work.

"(4) That aid should be similarly given to local agricultural associations or chambers of agriculture engaged in scientific research.

"(5) That in all cases where State aid is afforded it should be of a permanent character, subject only to certain definite conditions laid down by the Board of Agriculture, and to the admission of annual inspection by an officer of the Board.

"(6) That ample facilities should be afforded by the State to enable children in rural elementary schools to acquire knowledge of their future work, either as agricultural labourers or as tenants of small holdings."

13038. The first refers to a Central Normal School of Agriculture. That was proposed by Sir Richard Paget's Committee some years ago?—Major Craigie could tell you that; I do not know.

13039. The point I wanted to come to, and I do not know whether Major Craigie can tell us, is why it was not carried out. We have had a good deal of conflicting evidence on the question of agricultural sides to schools. Many of the witnesses think they would be of great value, others doubt it, and say that even if they were of value, they would be too costly. What is your opinion on the subject?—I doubt their value.

13040. No. 4 is that aid should be similarly given to local agricultural associations or chambers of agriculture engaged in scientific research. I think I should like a word of explanation as to how you would propose to carry that out?—That is what this Joint Committee wanted 17 years ago.

13041. Practically that has been carried out in another way—at least to a large extent?—Yes, and I should think in a better way, too. I cannot say that I quite agree with that; I think we have got beyond that now.

13042. (By Professor Middleton.) Your object is to show how much we have progressed in 17 years?—Yes. I think it is remarkable; some of those suggestions seem quite puerile now.

13043. (By Lord Barnard.) How far is it your opinion and the opinion of the Farmers' Club that sufficient progress has been made in elementary schools to enable children to acquire knowledge of their future work as agriculturists?—I was told that was a matter we were not to deal with. I cannot speak as secretary of the Farmers' Club as to that. I made a few inquiries as to what was going on, and that was one of the things I was told—"do not touch on elementary education."

13044. Are there any points I have omitted to ask you about upon which you would like to express an opinion?—No, I do not think so.

13045. (By Lord Moreton.) I am very glad to hear you have such a good opinion of the National Diploma examination, and I should just like to put one or two questions to you with regard to that. Do you think it would be an improvement if instead of holding that examination at one centre it were held at various centres?—I do not think so; I think it would be an unnecessary expense, because if a young fellow is really going in for an examination he does not mind whether he pays another 5s. for his railway fare or not. Do you mean the sentimental question whether a Scotchman likes to come to England to be examined, because that is one of Professor Wallace's opinions, I believe?

13046. No, what I am referring to rather is this: would it be fairer to a pupil living, say, in Wales that he should be examined somewhere in Wales rather than in Leeds; in other words, in the district with the agriculture of which he is best acquainted?—I think while we only get 48 pupils in Part I that it is not big enough to split up yet.

13047. You do not think if it was split up that there would be more pupils?—I think perhaps the agricultural college people ought to answer that question; personally, I should say no, but the heads of the colleges would know whether they have any refusals through distance.

13048. Do you think it would be an improvement if the

examination could be held more out of doors, I mean by that if it could be held at some college, for instance, where there was a farm, and that the examiner should take a walk with the pupil and do the practical agricultural examination, the *viva voce* part, out of doors on the farm?—I think that is the only improvement that could be made, and it would be a splendid improvement, and I thought I had put that in my *précis*. I do think that is the finishing touch it wants to the agriculture paper, because it is possible, I am afraid, even with the best examinations, to so coach a boy that he can get through it, and yet fail on the very very practical questions that one could only put by going round a farm; but I am afraid that the expense would be rather large, and that the time occupied would be heavy.

13049. I suppose you would agree with me that if such a system could be arranged there are other subjects besides agriculture on which questions might be asked out of doors—farm botany, farm entomology and possibly others?—Yes, I think if you had, we will say, 20 candidates on a farm, you could certainly employ five examiners in five subjects, and they all could be doing some at the same time, and it would be absolutely splendid.

13050. (By Mr. Latham.) With regard to what you have said as to having the right man and on the right lines for teaching the agriculturist, I would be very pleased if you will be a little more definite on that?—I want a man who has been through an agricultural college, but I quite see the difficulty of knowing what to do with him when he has left the college and before he is old enough to teach the farmer—no doubt you have got that from other witnesses, but, personally, I do not quite see what is to be done with him. From the county point of view I do not want him, and he must not go to the county straight from college and begin to teach farmers until he has learnt somewhere what the British farmer is. I do not know where he is to learn it, but he must not assume the position of an agricultural instructor until he has learnt it; he must go as an assistant somewhere first.

13051. I am willing to admit, and I hope my colleagues will agree, that this right man has never been defined in this room yet, and I am very anxious to get you to define it?—I can find him for you, but there are not many of them about.

13052. Will you tell us what class of man you would like him to be—what sort of man. Should he be a man that has actually been a farmer himself and who has tried to make his living by farming?—Personally, I do not think that is important, and although I may fail practically myself every now and then, I have somehow managed to pick up enough practical knowledge so that I can do my work, and yet, personally, I have never lived and worked on a farm. I have found great difficulties all through my life through not being practical enough, but I have picked it up through age, and I think these other men can do the same thing.

13053. Then are we to take it that he should be a man of rather mature age before he starts teaching agriculturists?—I do not mean mature age, but I do not want him to be quite a young man just come from college. I do not think it is necessary he should have emptied a dung cart under his father's eye, or mended a drill, or actually handled a plough. I know those were the three necessities at one time before a man could consider himself a farmer, but I think we are beyond that now.

13054. Would you suggest they should be sons of farmers?—No.

13055. That is the class of man you would like to be the general lecturer throughout the country?—Yes, I want him to think of nothing else but what good he can do to the agriculture of his county.

13056. I think from your answers to Lord Barnard we may pretty freely come to the conclusion that for the best class of farmers there is very little necessity for us to take care of the education of their children?—I should not worry about that. They are quite capable of taking care of themselves. They attend every lecture and pick up every bit of information they can get anywhere and use it on their farms. It is a class still lower than that that I want to get at—the man living down the unmetalled lane. That is the man I want to get hold of. He is in the same state now as he was 100 years ago. He reads nothing and muddles along anyhow. What I want is an instructor who can go on his bicycle and call on a man like that, because that man will never find the instructor, the instructor must go and find him.

13057. I was just going to use the words that I think belong to Bedfordshire more than any other county, that if they will not go to education, education must be taken

to them?—That is it. That was the finding of this small committee in Bedfordshire of which I was Secretary.

13058. Are you of opinion that many men have expressed in this room that agricultural sides to secondary schools would be a mistake?—I am perfectly certain they would. It was proposed to do that in Bedfordshire for the sake of running after a charity of £200 a year. They thought they could get hold of that if they were to go to Dunstable, but Dunstable being on the chalk I opposed it, because I said you could not have phosphatic experiments on the chalk. They wanted to tack an agricultural side on to the grammar school. I opposed that and said I thought it would be a great mistake.

13059. After they have left the secondary schools, you think they should take a course of short courses that would lead them up to the college or the scientific instruction?—No, I do not think I go as far as that. I think the short courses should stand by themselves.

13060. I wanted to get from you whether the short courses lasting for ten weeks or so would not give these young men an idea that they knew enough?—With their farm and a succession of short courses, I think that is enough for a farmer.

13061. Without any science?—He gets his science in the short courses.

13062. He would not get very much science in five or six weeks?—I do not say five or six weeks. I say a series of five or six weeks. You must remember that they are arranged at a time when the farmer can spare the boy and he can go on for years if he likes attending the short courses.

13063. I cannot see where all the money is to come from that will have to be allocated to these short courses, and it must be by means of help from the counties. My experience is that if they are not charged a fee at all they will not go to them?—Our courses are filled at the present time.

13064. With the young farmers and the better class of agricultural labourers?—Not agricultural labourers but farmers.

13065. I have often been discussing the question of how beneficial it would be if we could get better farm bailiffs. Nine-tenths of the farm bailiffs are not farmers' sons, they are agricultural labourers?—Farm bailiffs are not agricultural labourers?

13066. What I am very anxious to know is this. I think there are a very great many very excellent farm labourers that have risen above their class and would be much better servants to us if they could have a rather better agricultural knowledge?—May I interrupt you for one moment. We are at one. When you said the word "bailiff" I did not know you meant what we call in our part of the world, working foreman. Our working foreman comes from the agricultural labourers, but our bailiff, that is a man who would manage a home farm, I should say would probably have been a farmer's son. In my experience, the farm bailiff is a superior man to the working foreman. I do not agree with one thing—from my experience of working foremen, and I have had them under me all my life—if you begin to teach them much science you begin to take them out of their own line; they are a splendid set of practical men with great knowledge, and I am not sure that you would not spoil them.

13067. I am very much afraid the words you used just now that the farmers were the greatest sinners must apply there also?—If you had a working foreman managing an outlying farm of 500 acres, you ought to put the science into the farming and you ought to have an eminently practical working foreman there, and I do not think it is necessary that that man should know a tenth part of what you know.

13068. I agree?—He would be a horrid nuisance if he did, I think.

13069. But is it not better that he should be a better educated man than he is under the present system of education?—If you want to improve his position and somebody is going to lend him the money to take a farm for himself I agree with you, but if he is going to be a working foreman all his life I do not.

13070. Why does not this man want as much education as the small working farmer—the farmer who is going to farm 40 or 50 acres of land?—Because the working farmer has to have the knowledge of Mr. Latham in his head while the working foreman gets his knowledge from Mr. Latham. There are two separate working brains in the one case and a combined brain in the other.

13071. Do you not think the working foreman may be a most useful man if he has some slight veterinary knowledge, for instance?—Yes, I think it is very important he should have that, in fact, my experience between a good working foreman and a bad working foreman is that he varies in direct proportion to the veterinary surgeon's bill. If you get a fool you will have big bills from every one all round, the tradesman, the veterinary surgeons and so on, because he is always sending for some one, as he knows nothing himself, but if you get a good man who has been brought up properly and knows the smaller diseases, you will find you will have no veterinary bill at all probably.

13072. How is that man to get his education unless he attends some of these short courses?—I think if he started on the farm when he is about 12 years old, by the time when he is about 40 or 50 he has got it—I cannot tell you how, but he has got it.

13073. (By Lord Moreton.) If he started on the farm as a child and had a chance of going to short courses, would he not be a valuable man at 30 instead of, perhaps, having to wait until he is 40 or 50?—Yes, but I am so afraid that if you teach that sort of man you will spoil him. It is because he is so eminently practical that you would spoil him. He cannot write and has never ruined his memory by writing anything down as we all ruin our memories by keeping a pocket-book. He never forgets anything, and he is an eminently practical man. I will give you an example if I may—take wild onion; scientific people have been trying to find out how to cure wild onion, and up to the present they have not succeeded very much, although one or two of them now think they have found it out, and I think they have. I do not think it is necessary for the working foreman to know how to eradicate wild onion, but it is absolutely necessary for the small farmer to know it. That brings out the distinction between the two.

13074. (By Mr. Latham.) I am disappointed, I must confess, that you do not see the necessity for raising the purely working foreman to as good a position as the man who farms 50 acres of land, and who has not had anything like half the responsibilities that the working foreman has?—I do not think you want to do too much to the working foreman, else you will do away with the *raison d'être* of his existence. He is there to be told on big points what to do, and he is there to do small points on his own initiative; I think he is quite different from the small farmer.

13075. I must say I think he is a much more responsible man. Do you favour that these young men should be articulated to better class farmers?—Yes, if you can get the right farmer. Personally I always send them to Scotland. I may be wrong, but I have a greater opinion of the firm hand of the Scotch farmer than of the jolly life which is generally found on the English farm, and which, I am sorry to say, has frequently been the business ruin of many a young fellow.

13076. With regard to the young people, after they leave the practical man are they fit to go to college?—Yes, but not if they are going to be farmers.

13077. You really do not value the life of the college to a farmer who is going to make his living out of farming?—Supposing a man has only £3,000 in the world, and he is farming 200 or 300 acres and has got a boy, if that farmer is keen on that boy following him in the farm, I should certainly advise him not to upset his boy's mind by sending him away from him so long to an agricultural college, because he will never come back and get his living with that £3,000 out of farming in the same way as his father did.

13078. How is that young man to get his scientific education?—By these short courses. I say that is sufficient for him, but you must not overdo it, and he must do the rest himself.

13079. And possibly to get a little information from Professor Voelcker, and others of his class, because you would never get sufficient education in five or six weeks to get analyses of soils and values of manures, and so on?—No; but what with educating himself and going to a sufficient number of these courses, I think he will get sufficient knowledge for a farmer, but if you do too much he never will be a farmer at all.

13080. I think from your evidence we must come to the conclusion that scientific education is against farming?—No, you must have these colleges to produce the men that are necessary to teach the farmers. Let me put it in another way. If I had a son, and I wanted him to come into my office, and I sent him for four years to Oxford, I am

Mr. H. T.

Eve.

3 July, 1907.

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Mr. H. T.
Eve.

3 July, 1907.

perfectly certain he would never sit down in my office ; it is the same thing with a farmer. If you send him away for two or three years to an agricultural college—I may be wrong—but I think he would not settle down in what I call a second-class farmhouse with not much money about and earn his own living with the same capital that his father had ; it would upset him.

13081. With regard to the rates for the teaching of secondary education, you made the remark that you thought the farmers were the greatest sinners. Do you not think that is the most natural thing under existing circumstances ?—I think it is most important that someone should watch that the rates should not go up, and I think it is to the credit of English farmers that they are more or less really the only people who are serious in that, but when it comes to the point of farmers objecting to rates being raised, and thereby cutting down agricultural education, I am against them.

13082. I quite agree about being against them ; but is it not the most natural thing that they should be against paying these heavy rates when the good that could come from it is not at all allocated to farming, but generally to other purposes ? Since 1902 all the money allocated to secondary education has been absolutely against the farmer ?—I agree ; but where it comes to an increase of a halfpenny rate, and to avoid a halfpenny rate they cut down agricultural education—because that is what it comes to in the end—I think that is wrong.

13083. I so much agree with you. If there were £2,000 coming from somewhere else for agriculture, and we had only got to raise £2,000, we should not be so stupid as to object in that way, but now it is the other way round. If we raise a rate equal to £2,000 somebody else gets the benefit of it ?—Yes.

13084. It is sad to relate, but possibly it is true, that the very well educated man would not return after a college education to agriculture ?—No—as one farmer put it to me once, the more you teach a young boy in the elementary school about agriculture the less chance there is of his sticking to the land. It is a sad thing to say, but it is very often true.

13085. I am very sorry to hear you make that remark, because it is exactly opposite to what I think. I think the rural teaching is now just the very thing to make them stop on the land where they are taught everything relating to agriculture, and if they could go for short walks on the land and go about with their fathers or with the shepherds or with the carters, it would give them an inclination to follow that life ?—I should have thought so. I was not giving that as my opinion ; I was simply quoting what this farmer told me—and he was one of our biggest farmers.

13086. I wonder what he would like them to be taught ?—I think his idea was that agriculture is not much of a line for them, and if you let them drift into agriculture, as their fathers did, if they once get there as boys they will stop there ; but his idea was that if you tell them too much of what they are going into they will not go into it.

13087. With regard to agricultural labourers, do you not think there is a good deal of good in giving prizes at agricultural shows for their labour, such as sheep shearing, hedging, ploughing, and so on ?—Yes. I am tremendously in favour of that ; the minor arts, as we call them in Bedfordshire. We have done a good deal in that direction. I should like to make one remark with regard to ploughing matches. I have heard it stated that ploughing matches afford very suitable opportunities for getting very excellent ploughmen, and that because of that some of the farmers are very shy of sending their men to compete. I do not know whether other people have heard the same thing.

13088. In olden days when the manufacturers took up these ploughing competitions for advertising purposes that was always the case. As soon as farmers saw the champion in the field everybody wanted to have him, but I do not think that is so much the case now ?—I should like to see every county council in the country encouraging hedging and stacking and thatching and those sort of minor arts, because they are getting lost arts in many counties. I think the way the art of hedging, for instance, has been lost in England is very serious.

13089. (By Lord Barnard.) Do you do any draining ?—When we have got any money to drain with, but we have given up draining in the last few dry years.

13090. Speaking personally, I find draining and boring are very essential, and I should include both of those in the instruction ?—We have a great race of drainers in Bedfordshire who still know their work, and I am prepared at any time to send 50 excellent drainers to any part of England and take it piece work.

13091. (By Mr. Latham.) You were speaking of thatching, hedging, and ploughing. Do you not think the very stimulus of offering these prizes induces these men to educate themselves in those things ?—Yes, it is absolutely necessary that there should be prizes ; but on the other hand we were stopped by the auditor in Bedfordshire, because he said we were giving prizes without instruction, so to dodge the auditor a certain amount of instruction is given, but I do not think that instruction is very often sufficient.

13092. That is what I wanted to draw from you : that these labours of agricultural labourers are more easily taught by their own men than any instructor could place before them ?—I should join both. When you have a competition for farriery the blacksmith will listen to a big veterinary surgeon with tremendous interest, and they learn a good deal.

13093. I am very much afraid you must call that scientific teaching ?—Yes, quite so.

13094. The other is the actual sweat of the man's brow, building ricks and that sort of thing. There is no science in that, and there is no science required to hedge ?—With regard to hedging, I should like to get the best man in England to lay a hedge, and then get the other men to look on while he is doing it, even if he never says a word.

13095. We have had it said in this room that if we have outside examiners the teachers should be always sitting by to see how you conduct the examination. That is just the sort of thing that I dislike to see myself, speaking as an examiner ?—That is absolute nonsense, if I may say so.

13096. (By Professor Middleton.) Your idea for agricultural instruction in the county is that each county should have its own instructor ?—Yes.

13097. And that there should be some central institution to which he is attached, such as you have in Bedfordshire ?—Yes, certainly there must be a headquarters. That is most important.

13098. Do you think that the principal of the school or the central institution should act at the same time as a county inspector ?—That is a very difficult point. I would rather he did not if it could possibly be managed, because he has not got time or thought to do it. I think the instructor should be under him.

13099. The county instructor should be under him ?—Yes. The head of the institute must be the head of the thing in the county.

13100. You consider the county work so important that in a county of the size of Bedfordshire you would want a separate instructor really if you had the funds to work the county ?—Yes. My reason for saying that is because I have found if a man has another object his thoughts are off the work that you want him to do.

13101. You think an instructor ought to have been to an agricultural college ?—Yes.

13102. And taken a full course ?—Yes.

13103. You agree that he should be one of the best men at the college ?—Absolutely—he has to know a terrific amount.

13104. Then he has to spend 10 or 15 years in farming, you think, before the farmers will listen to him ?—Yes, gaining a knowledge of farmers and their ways.

13105. He has to gain experience of agriculture not in one district of England alone, but in the whole of England ; he must have general experience, not local experience ?—That is a very difficult point, because general experience might be quite unsuited to the local experience where he finally gets to, and then he has got to begin all over again locally.

13106. I am thinking of the course that the would-be instructor must follow. He has taken his agricultural course at college, he goes as an assistant and has got to be prepared to act as a county instructor somewhere. He does not know what county he may be asked to go to, and it is therefore necessary for him to pay attention to the general practice of agriculture in England ; he must have a wide knowledge of the practice of agriculture ?—Yes.

13107. When you have got the ideal man ready what are you going to pay him in the county ?—I have put in my *précis* that the present salary that is offered enables a County Council only to offer it practically to unsuitable people, and unless a decent salary is offered fit to keep a married man you will never get the right man.

13108. If County Councils have never offered a suitable salary do you not think it is little wonder that the farmer

complains?—I do. I think the whole bottom of the thing is money in that direction. Perfectly miserable salaries are offered to these people which only appeal to an unmarried man, and even then they are not sufficient.

13109. I think that answer you have given very largely explains the first point you have made in your evidence about the dissatisfaction of the farmer?—Yes.

13110. You say they are not satisfied with the present system of agricultural education and that it is extremely difficult to find out the reason. I do not think it is very difficult to find out the reason. If they have not been prepared to pay for the type of man that is required the type of man has not been forthcoming?—That is a thought I had not considered, and I think that is right.

13111. On another point you were very definite in your opinion, and that was that a lad who was intending to become a farmer should not have gone for two years or three years to an agricultural college. You think if he had spent so much time away from home he would not be likely to go back to the land?—To what I may call, without disrespect, a second-class farmhouse.

13112. I think your opinion is quite right so far as the South of England is concerned at the present time, but do you not think that this may be only a temporary phase in our education?—Do you mind telling me does it obtain in the north, because I have such a tremendous respect for people in the north? Education has always come from the north to the south, and if you say that it obtains in the north we may attain to it in the south some day.

13113. I will not say the North of England, but I think if you take the South-west of Scotland you will find a very large number of the young men who are going through agricultural colleges there go back on to the land?—Yes.

13114. Agricultural education in Scotland has not been developed for a much greater time than we have had it in England, has it?—No, but they had John Knox 200 years before we had a similar man!

13115. A short time ago I was in Saxony, and I asked the Professor of Agriculture at the University of Leipzig what classes the students were drawn from, and he said many of them came from quite small farms. I asked him whether many of them went back to the land, and he said many of them do, but of course if some of them get better openings and can occupy themselves in other ways they leave the land?—I think that is all a question of statistics. I think the statistics could be got out as to farmers' sons who go back to their father's farms after they have been away for two or three years to an agricultural college.

13116. I agree with you that it is so in England at present, but I look upon it as a temporary phase, and we may expect to find the same sort of thing in England as has taken place in Saxony and as is taking place in Scotland?—I do not know what the attractions are in Saxony, but a young fellow who has been away and who has widened his mind for two or three years at a college sees other things that he thinks he can make a better living from than by going on to a 300 or 400-acre farm, and I think in a thickly populated place like England even compared with Scotland, there are so many things going on that they are pulling in different directions to prevent a boy going back on to a farm. It is a dull life on a farm.

13117. It need not be?—At any rate the evenings are dull.

13118. The evenings need not necessarily be dull either. I think the explanation of the fact you have brought before us so prominently is this, that whenever you have had a well qualified young agriculturist in this country he can always find something better to do than to go back to the farm, even in agricultural work as an instructor?—I think you want the colleges to supply the teachers.

13119. You expressed the opinion that County Councils should be controlled to some extent in their education work?—Yes.

13120. One could not control County Councils under the laws that exist at present?—No.

13121. One could only influence them, I think, if you were to offer them something?—Yes, that is one way of doing it. I am quite prepared to give the Board of Agriculture similar powers to what is proposed in the Small Holdings Bill for the County Councils.

13122. That is what was in your mind?—On this point, because I can foresee that counties are going to do less and less. I do not like the present system of the Board of Agriculture asking if they may come, and then we have someone who comes down, but he has got no power. He

is always very nice and polite and gives us ideas—I am talking as if I was a member of an Agricultural Committee—but if we like to get up on our hind legs and say we do not want him we need not have him, and I do not think that is the right way to go on. I think he ought to have more power than that because I think he knows more than we do.

13123. You have also expressed the opinion that a Consultative Committee would not be of very great practical use?—I am afraid I have not quite grasped that. There may be reasons which I have not considered, and when I gave my answer I had it in my mind whether a committee was absolutely necessary to give information to the Board's officers before they could work in England, and on that point I did not think it was necessary, but it might be necessary in other ways, as was pointed out by Mr. Latham. If you think it would have any moral effect in getting money out of the Treasury I should go for the appointment of a committee at once, but they would be very clever men if they did I think.

13124. Now with regard to the National Diploma examination you stated that the examination was different from any other examination in England. I think the chief difference that you pointed out was that the examiners met and consulted each other?—Yes.

13125. That is done in most examinations in my experience?—Not in the same degree. I agree you have an examiners' meeting, and in the National Diploma we have a formal examiners' meeting, and after that examiners' meeting the Board, but the spade work—and Lord Moreton will bear me out—in an unofficial way by the examiners sitting next to each other for two or three days constitutes the difference, and I find that makes an enormous difference: these quiet unofficial talks about the candidates which you do not get in any formal meeting of examiners, is very beneficial.

13126. You take the examination papers at Leeds?—Yes.

13127. What happens there?—We have a room, and we all sit down and do our papers. When we have a certain number done the examiners in Geology and Chemistry and so forth get together and discuss them. There are some good men they do not want to talk about at all, and there are some that are too hopeless that they do not want to talk about, but there is a middle lot that they do want to discuss, and they do discuss them. The whole time we are on the look-out for cram. That is what we want to keep down, and I say in those unofficial talks about a candidate if the chemist says; "I think this man shows cram," and the Botany man is of the same opinion, we get suspicious of that man, and we *viva voce* him. I know at Cambridge you have meetings of examiners, but Lord Moreton will bear me out that at formal meetings of examiners nothing much is done to go below what appears on the surface.

13128. How long do you sit like this examining papers?—We are there for three or four days.

13129. How many papers have you got?—Only 49.

13130. I myself do a great deal of examining, and have been doing for 15 or 20 years. I should not at all like to sit and consult with other examiners when I am at my work. I first make up my own mind as to the candidates' work?—So do we, but my co-examiners agree that ours is a very good system.

13131. As a system I should not myself like it. I like to examine independently, and to make up my mind, and then to consult the other examiners?—That is what we do. We do not talk to each other until we have examined the papers first.

13132. I see. You express some surprise that the criticism was that the examination was not practical enough?—Yes, I have heard the criticism made in recent years that the whole trend of it was that it was an examination by practical men who had never taught in their lives, and, secondly, that they did not really know the questions to set; but I should like to add that on all these questions of examination—I do not want to blow my own trumpet—I happen to examine in surveying, and that is a practical subject as to which there can be no argument with regard to whether the papers are practical or not, and in that way, perhaps, I am speaking out a little more freely than some of the other examiners could.

13133. I think what you refer to about the criticism as to the examination not being practical, was not criticism against the examiner, or the practical character of the questions, but that what was in your mind was, that

Mr. H. T.
Eve.

3 July, 1907.

Mr. H. T.
Ecc.
3 July, 1907.

there was no practical examination on the farm?—No, I think it was much more than that. They objected to people setting examinations who had never taught a candidate—who had never taught anyone. Very few of the examiners teach anyone, and they said practically that the only man who could set a practical examination was a man who taught people. That was Professor Wallace's idea in Scotland.

13134. You say the large farmer can look after himself and that we do not need to think of the instruction of his son?—No; I did not say that.

13135. I rather understood you to say that?—That you must provide means for the instruction, but he does not require any push to avail himself of the instruction for his son.

13136. You would rather say he does not want any personal aid?—No, I do not think he does. I think he has brains and money enough to see that his son is properly educated if there are the means to educate him with.

13137. I merely wanted you to make the statement that you must provide the means?—Most essentially. My point was that he does not want this running after like the farmer down the green lane does.

13138. (*By Mr. Medd.*) Have you ever heard of anyone advocating agriculture in elementary schools?—What do you mean by agriculture?

13139. You used the term—you spoke of people advocating agriculture in elementary schools?—I do not remember saying it first of all.

13140. I think you will find that you did, but you can look that up after?—Yes, I remember now, but I was not giving my own opinion. I was stating the opinion of a large farmer.

13141. That large farmer stated that agriculture was a suitable subject for an elementary school?—No, he said the more you teach a boy about agriculture—I ought to have said "about"—the more likely he is to have nothing to do with it in after life. That was his statement.

13142. In my own experience I have never heard the word agriculture mentioned in that respect, but a variety of subjects which deal with animal and insect life, and which are not agriculture in the slightest degree?—I quite agree. I am a great adherent of nature study being taught to boys.

13143. When your boys are finished with these short courses what is it exactly that you advise them to do?—I do not like the expression "finished with the short courses," because I want that boy to be on his father's farm and to take up these short courses every now and then.

13144. To still go with them?—To still continue with them, and to still stop on his father's farm.

13145. What is the type of people whom you desire to go to an agricultural college?—The best farmers' sons—men who have got money, and with regard to whom it is not absolutely necessary whether they come back on to a farm or not.

13146. What type of student do you care for at Ridgmont?—I want the ordinary local farmer's son there, and the instruction will be such as will not prevent him from finally remaining on his father's farm.

13147. You recognise that such schools for agricultural purposes are better than having agricultural sides to a secondary school?—Yes; I do not trust an agricultural side to a secondary school. In the first place I think you will get the wrong people teaching it if you do not mind, and agriculture will be put on one side and the other class of education will be paramount.

13148. You recognise, of course, that it is quite out of the possibility of each county to establish such a school as Ridgmont?—I do not know why.

13149. Because the capital expenditure is too great for one county?—I do not know why other counties should not do what Bedfordshire has done.

13150. Bedfordshire has had very great assistance from the Duke of Bedford?—Yes, but Bedford has had the pluck to vote more money for agricultural instruction per acre than any other county in England.

13151. Yes, that is excellent, but I have no doubt that what the Duke of Bedford has done to stimulate it has encouraged your County Council to do more for agricultural education than has been the case in a great many other counties?—I think that is probably true.

13152. In view of the difficulty there is undoubtedly in starting new schools of new types, do you not think it would

be much better for two or three counties to co-operate and utilise such a school as yours as the school for that area?—Yes. In Bedfordshire we draw £50 a year from two or three counties, and they use the school, and as there is very good train accommodation I think that is an excellent practice.

13153. It is of material advantage to you, and it is also of material advantage to the other counties?—Yes. I may say we practically did that at the suggestion of the Board of Agriculture. That is one instance of a valuable suggestion that we had from them, and that we have carried out.

13154. I am particularly anxious to see all England covered by groups of counties for such a purpose?—I agree.

13155. You are affiliated as a county to the University of Cambridge?—We are.

13156. What direct advantage do you get from that?—I think it is most important we should be affiliated to Cambridge.

13157. As a matter of sentiment, do you mean?—No, much more than that. I was on the Committee, and I believe I seconded that we should be affiliated. I went into the question, and I came to the conclusion that it would be worth it, and I think it is worth it alone to get the services of the—I do not know what you call him, although I know him very well, the man who was in those days Mr. Wood—Professor Wood to come over and direct our experiments. That alone is worth it, and it is very, very useful, and I think we might use our connection much more than we do.

13158. If you apply to a collegiate centre or a university centre for the periodical advice of one of their most competent men your area must undoubtedly benefit?—Yes.

13159. You referred just now to the action of the Board of Agriculture. Do you not think that if the Board of Agriculture had annually schemes of agriculture for the various counties combined within a particular area submitted to it, not for revision, but simply for advice and so forth, it might be of benefit to the particular scheme, and it might stimulate the particular counties a little more?—Yes, that is one way of doing it. Another way of doing it is to have an expert from the Board of Agriculture to just talk it over with the agricultural instructor for the county.

13160. Yes, it might be done in that way, but that does not seem to me to have quite so much effect as you formally, as a local authority, submitting your scheme for mature consideration by the Board, which would be returned to you with their advice and suggestions?—I think I would rather do it the other way, that the county should carry out something, and that then the Board should criticise it the next year. I do not like the idea of any one county sending up a cut and dried scheme which would take some time to prepare.

13161. I think Lord Barnard made an allusion to a consultative committee. It would be one of the functions of that consultative committee in London to discuss the schemes submitted by the various areas, and its more important work would be to take into consideration the views of agriculturists at large, and bring all the required pressure that might be wanted on the Board of Agriculture, and on the Board of Education, in so far as the Board of Education affects agriculture?—Would this consultative committee be composed of practical men or scientific men?

13162. Practical men I should suggest?—I do not think you can dictate to a county. In Bedfordshire, for instance, we might want to have experiments on potatoes, and some committee in London might tell us that we must have it on oats.

13163. You do not want that, but everybody has felt during the past few years that there are many respects in which the Board of Agriculture might be put in possession of larger funds, and might take a more active part in the direction of English agriculture. If a consultative committee were established, composed of men familiar with all the local requirements from Northumberland to Cornwall and so forth, men whose names were familiar with everyone in the county, who drew up and submitted their ideas to the Board, and brought pressure to bear upon the Board, do you not think that that would prove a very valuable body?—I cannot say that I am sweet on it. I would sooner the agricultural instructors of each county met the official of the Board, and that they should talk it over together. Unless the financial point of view enters into it, I do not see that such a committee as you suggest would do any good.

13164. Yes, I should think there would be the money element. As it is at present, the official goes down and

talks it over, and he has no money, and the Committee might have?—I think if the Committee had any moral effect, or financial effect, I should approve of it, but otherwise I do not think I want it.

*13165. (*By Lord Barnard.*) You have not referred in your evidence to what is done in this direction by our colonies and by foreign countries. Do you know anything personally of that?—I only know it second-hand, and I do not think what I could tell you would be of any value therefore.

13166. Should I be right in saying that your object is by means of short courses not to make a man a complete scientific farmer, but so to open and educate his mind that he may continue to improve, and gain his own scientific knowledge and practically apply it?—I should not go quite as far as that: I am not very fond of the scientific farmer only. I find in practice that the real old-fashioned practical man is getting quite as good a living out of his farm as the very scientific gentleman, and I do not want the farmers' sons practically ruined by turning them into scientific farmers. I just want to give them enough scientific knowledge that will help them, and help their fathers in their practice.

13167. Not to make him a scientific man, but to so educate his mind as to make him capable of availing himself of all the advantages that are to be obtained from science as relating to agriculture?—Yes: but I think that ought to be done in his general education: his mind ought to be educated to enable him to take advantage of scientific knowledge. I want him to take cognisance of what is going on, in a semi-scientific way, of things that will help him practically on his farm when he gets back to it: I do not want it to be overdone.

13168. One subject has been mentioned here, that he

should be able to understand analyses?—With regard to that I do not think it necessary that he should be able to understand all analyses, but about a tenth part of what a chemist should know—the practical way of reading an analysis is most important.

13169. You are aware that in Scotland these agricultural colleges receive more assistance from the central Government than any of our institutions do in England?—Yes. I take in a Scotch paper because I like to know what is going on in Scotland, and I am aware of that.

13170. In England you think we compare unfavourably with Scotland in that respect?—Yes: after years of hard work we get £100 given to us, for example, which may be taken away at any moment.

13171. You are of opinion that greater control should be exercised over local bodies. You have considered that that would require legislation?—Yes.

13172. An amendment of the Local Government Act?—Yes.

13173. It is a difficult thing to bring about in the House of Commons, which contains representatives of all classes of the community, not of agriculture alone, and therefore agriculture must make out a very, very strong case for any special favours?—Yes, and that is a thing that the farmers themselves will not do. I am speaking perfectly plainly. Our County Council has a majority of farmers, nearly all of them belonging to the Chamber of Agriculture, and yet they will not do it.

13174. The proximity of London, of course, must affect questions of that kind?—Yes, but I do make a very strong point that if any county is not going to do its duty to the farmers by giving money to provide facilities for the education of the farmers' sons, that there should be some scheme by which they could be made to do it.

*Mr. H. T.
Ecc.*

3 July, 1907.

Major PATRICK GEORGE CRAIGIE, C.B., called and examined.

13175a (*By Lord Barnard.*) The Committee thought with your great knowledge of the history of agricultural education in this country that it would be of considerable value to them if you could give them in your own words, if you please, some information as to the origin in this country of the control and assistance granted by the central Government to agricultural education?—The origin of the movement by the State in favour of agricultural education goes a considerable way back. The Scottish Chair of Agriculture in Edinburgh in 1790 is by far the oldest form of agricultural education that we have known. It was founded not by the State originally, but by private benevolence in that year. Subsequently to that, the Highland and Agricultural Society of Scotland, whose charter included educational work, very largely aided and developed that Chair and applied to the State for assistance, which was granted somewhere about 1868, as far as I can trace it. That was the first instance of State aid, and it was on a very small scale. It was two or three years after I had myself attended the class in Edinburgh, and the matter, therefore, is impressed on my mind as regards the date. But even before the year 1868, or just about the same time—I think Lord Moreton will probably bear me out—the Royal Agricultural Society started their own scheme. So that what I should like to put before the Committee is that a movement for organised agricultural education dates, not from the beginning of agricultural depression, but from the most palmy and successful days of agriculture. I think that is important. With the advance of science it was soon considered desirable to increase the facilities for teaching farmers. In the early papers, which I think Mr. Eve alluded to, as read before the Farmers' Club, the education that was proposed was directly that of the sons of existing farmers. Great dissatisfaction was felt at the absence of good general education in the country districts and the impossibility of farmers' sons being trained in the very imperfect grammar schools of the counties, and of afterwards acquiring scientific knowledge on the basis of their general education. There were papers in 1859 at the Farmers' Club, and again in 1865, and also in 1873, all bearing on that point, that the general education of the farmer's son was necessary before his scientific or technical education began. I served on a committee myself at the Central Chamber of Agriculture in 1873, of

which Sir Michael Hicks Beach, as he was then, was chairman. I was vice-chairman, and we reported on a scheme for improving endowed schools throughout the country, very much on the lines of the scheme that the late Canon Brereton was in favour of.

*Major P. G.
Craigie, C.B.*

13176a That would almost synchronise with the date of the Endowed Schools Act?—Yes. In 1874 the Highland and Agricultural Society again was to the front in this matter, and they approached Her Majesty's Government of that date with a formal memorial setting out their needs. By that time the Science and Art Department at South Kensington had very largely extended the facilities for teaching engineers, manufacturers, and so on, the advantages of science as applied practically to different branches of industry. In particular South Kensington was aiding the training of engineers and manufacturing chemists and various other practical branches, but no attempt was made to apply generally—not only to farmers' sons, but to the smaller people about the country—the practical application of science to agricultural processes. The result of that was that the South Kensington Department started a scheme of instruction that was called "the principles of agriculture." That was the second stage of State aid to agriculture in this country. I have here the reports and discussions that took place on that South Kensington work at the Central Chamber of Agriculture in the years 1876, 1877, 1879, 1880, 1881 and 1882. I can speak from personal knowledge of what was being done at that time, because I was acting for part of the time as an independent member of the Council, and for another part of the time as their secretary, and there were many discussions as to the mode in which the teaching of those principles of agriculture should be administered. The "principles of agriculture" seems to me a singularly inapt term. We approached the Government to get teachers classes instituted, and to get them educated so as to teach more practically, much in the same way as Mr. Eve has pointed out. It was not very successful then. The men who were rural schoolmasters were hardly able to add to their other work, and were not qualified by their early instruction to impart anything like practical instruction in agriculture. The third stage began in the year 1879 with the advent of agricultural depression. The Royal Commission on Agriculture was appointed at that time, the Duke of Richmond's

13176b

Major P. G.
Craigie C.B.

3 July, 1907.

13176c

Commission, and sat from 1879 to 1882. Their Report is before the Committee. It calls attention to the absence of proper facilities for the teaching of farmers' sons, and those intending to practise agriculture. That was immediately followed by a movement, which was also recommended by the Royal Commission on Agriculture, for the formation of a distinct Department of Agriculture, which would have charge of these matters. Such a Department was formed, but at first in 1883 it was merely a Committee of the Privy Council. It was appointed by Mr. Gladstone with the object of meeting the wishes of agriculturists, and that tended to focus the attention of the Treasury upon the agricultural classes and upon the need that existed for money to be devoted to the purpose of the teaching of agriculture. In 1884 the Royal Commission on Technical Education reported, and no doubt the special reports which Mr. Jenkins, the Secretary of the Royal Agricultural Society, made to that Commission made a great impression on the public mind, and pressed for a more practical machinery of teaching than that which the South Kensington classes afforded. A year or two later, in 1887, the Farmers' Club again took up the subject. At that period attention was mainly directed to dairy teaching as distinct from general agricultural instruction. About the same time the question was raised in Parliament very largely by Sir Richard Paget and others, and a Departmental Committee was appointed which sat in 1887 and 1888. That Committee took a good deal of evidence, and no doubt their conclusions are all before this Committee. I was myself on the Continent at that time acting for another Royal Commission on the markets of certain great cities, and I was requested by the Privy Council to furnish them with a formal report on the system of French agricultural schools. That I laid before the Committee of the Privy Council in 1888, and almost simultaneously with that the report of the Paget Departmental Committee came out and came before Parliament.* There the direct recommendation of State assistance was made, and for the formation of district schools, and that a sum beginning at £3,000 a year should be expended by the State for that purpose, rising eventually to £15,000 a year, and that a sum of £3,000 a year should be devoted distinctly to agricultural research. I think I may say that is the origin of State aid to agricultural education. I need hardly tell the Committee that the State did not act on that report to its full extent, but placed a sum of £5,000 on the Estimates to meet the requirements of agricultural education, and the Privy Council immediately proceeded to seek for institutions which were qualified to receive the grants. The Report of the Paget Committee, however, showed that there were almost no such institutions in existence of the type suggested.

13177a

13177b

13177c

13177. Can you tell us what the staff of the Agricultural Committee was that had the control of this education—who were the officials through whom they sought this information?—The Committee of the Privy Council were certain Lords of the Council named in the minute of the Council. The Duke of Rutland was the immediate Minister in charge at that particular time. Sir Charles Peel was Clerk of the Council, and when I went to France for the Council, I took my instructions from Sir Charles Peel and to him I sent my report. There was originally no educational staff at all, although certain inspectors were ultimately appointed and the Secretary of this Committee who was then employed could give you the details of their position. Then in 1888 a Bill was introduced to establish a Board of Agriculture. It did not pass that year. It passed in 1889, and as the result of negotiations which were made by outside bodies, the promotion of agricultural education was distinctly laid down in Section 2 of the Board of Agriculture Act as one of the duties of the State to the country. That was the origin of the present system of grants. I had the honour about this time to receive the Directorship of the Statistical, Intelligence and Educational Department of the Board of Agriculture. At the end of 1889 the work began. The development of those grants has been the subject of many reports that the Committee have had before them, but I should like on that point to say that the chief feature I found and, indeed, what the Paget Committee had found before, was the absence of teaching institutions beyond the South Kensington classes and beyond one or two private colleges, which were quite voluntary in their character, like Cirencester. The first action we took on the Board was to try and foster the setting up of certain large collegiate centres. The Paget Committee had recommended, on the other hand, the creation of one central State school, a normal school for the training of teachers. I think that

very largely arose out of the evidence in my own report in 1887 and 1888 on the methods adopted in France, where the central University of Agriculture is entirely a State body and produces teachers for the schools and trains the departmental professors. That has never been adopted here, but following the system of local development which we developed here, those colleges were set up. The first idea was to establish one in each of the four divisions of England and one in Wales, but as it was found that local assistance and voluntary assistance was required, it was impossible to establish a rigid scheme of laying down a college in a centre of each particular agricultural division, although, as far as possible, the counties were grouped round the centres as nearly as we could, but the individual action of the counties, of course, modified the scheme. The first one that was established was at Bangor in North Wales, and, speaking generally, I think Wales had rather more of the teaching machinery than England, compared to the number of farmers in the country. The Paget Committee laid stress on the importance of not establishing institutions too definitely in advance and in excess of the number of persons likely to require instruction, and I think all through the more recent discussions on education there has been a tendency to neglect the fact that after all the farmers of England and Wales are only 200,000 persons by the Census, and that their sons and other persons who are at any given moment going into farming are not a very great number, and, therefore, we do not require a lot of costly institutions to provide for them so long as we have centres properly equipped with funds for the instruction of those that come to them. That is the origin of the collegiate centres.

13178a

13178b

13178c

13178. Would you now give the Committee your views as to the result of the effect of the Government control over such a system as has been established?—I think those opinions have been very fully expressed in my ten annual reports. These have been presented to Parliament as the Education Reports of the Board of Agriculture between 1890 and 1900, but the fullest statement of what I thought on the matter is contained in the last report I presented, for the year 1900-1. I summed up there the result of the provision made by the State. I ought to have added to what I said just now that coming down to a later period than the formation of the Board, the intervention of Parliament in 1891 provided the counties with a new source of income distinctly applicable to agricultural education in the Residue Grant. That, of course, as the Committee knows, was more an accident than a matter of policy. The money was not intended for that purpose, but when Mr. Goschen's scheme for the Budget of that year failed, it was suggested that this money should be handed over for technical education generally, and as the last witness said, the counties had their own discretion in the matter as to how it should be spent. In the tables appended to the Government report is shown exactly how each county allocates its money. Taking that money which the counties had as well as the money which the Government themselves directly granted, I found at the time of my giving up charge of the Board's educational work that we had something between £85,000 and £90,000 of public money in England and Wales applied more or less directly to agricultural education. The contrast between the time when the Paget Committee reported and the time when I gave up my educational functions resulted in this, that in 1901 there was £28 available for every £1 there was available in 1888, so that there was a large development of machinery and means. The development in the attendance at the different colleges was not so satisfactory, and that could not be expected at the beginning of a new system. I found exactly the same thing in France. The machinery must be set up first. The attendance at the colleges was considerably under the expectations, but the interest in the work was, of course, growing all the time. I see that Dr. Somerville in his report for last year states that by the means of the Government machinery you have 34,000 pupils under instruction at the present time. That certainly is a very large development and it is more or less satisfactory. In different districts there are more or less varying proportions. That includes all the short courses and the long courses; it does not include, of course, the teaching which is conveyed to the adult farmer by means of the experimental plots and visits to farms, which, if I may give my own view, is one of the most beneficial forms of instruction we can give.

13179. Or lectures?—The lecture system has not, I think, been in so much favour as it was originally—the

* Report on French Agricultural Schools. C. 5609 of 1888.

Major P. G.
Craigie, C.B.

3 July, 1907.

peripatetic lectures have not been maintained, and in some counties there have been substituted for them visits of farmers to demonstration plots and so on.

13180. We have been told that lecturing in the counties was necessary at one time in order to stimulate interest, and that now the interest has been stimulated, it is not so necessary as it was. Would you agree with that?—Entirely. I should like to emphasise what I said in this report. At the beginning of this century the State had definitely accepted a liability to assist in the education of farmers, and a large number of counties were equipped with all the machinery and all the teaching staff that was required for every grade of instruction from that in a local village class to a collegiate course of study, and it only wanted the farmers generally to recognise the facilities existing and to make use of them.

13181. (*By Mr. Medd.*) Are those annual records?—Certainly. In those reports of the Board of Agriculture they are all laid before Parliament.

13182. They are accessible to the members of each county?—Certainly. They are sent specially to every county. I think, probably, the Secretary of the Committee, Mr. Brooke-Hunt, could give you detailed evidence as to the actual figures.

13183. (*By Lord Barnard.*) He very probably will do. We thought it was very valuable to get from you information as to facts within your own knowledge?—Yes. There has been a new development, I should add, since the collegiate centres were created by the counties individually developing special schools, or minor colleges in some cases. That is quite a new development and, speaking entirely for myself, and not in any way as an official, I have a little hesitation in seeing considerable sums of money given to the smaller types of institution by the State. I think there is this difficulty, which the Committee will no doubt recognise, that you are placing the Minister in a considerable difficulty when a number of competing claims come before him urged on grounds of local interest. The criticisms that we have sometimes heard in Parliament have been that this or that part of the country has not received quite as much aid as another district. Almost on every estimate, I remember members for Wales putting in claims for more money and urging it on the ground that the Welsh farmers were poorer than the farmers in the rest of the country, and that, therefore, they should have more money from the State purse. On the other hand, the principle adopted by the Board has been to fix a maximum for the different collegiate centres beyond which the State help would not go, and when a fully-equipped college reached that point it received and could reckon upon a certain sum of money. I found the administration of the grant very difficult, because of the new schools that were cropping up in different directions—the possibility of overlapping was pointed out in the Paget Committee—and however useful these institutions are, they may create a tendency now to distract the attention of the central authority from the larger and more scientific colleges where the training of teachers and the highest class of agriculturists is carried on.

13184. Would you be of opinion that it is desirable that the whole system of agricultural education, at any rate where it is aided by public money, should be part of a national system, and not local, except in so far as schools must be somewhere?—I am afraid it is not possible to do that as a matter of practical politics; speaking merely theoretically, I should like it to be done, but I do not think it could be done.

13185. Not entirely?—No.

13186. We will put it the other way, that it would be a great misfortune if—to use the word I have used to other witnesses—each of these counties and districts were to be locked up in watertight compartments and not to care what was going on in the next district?—Yes. I think the county unit recommended by the last witness is not one that *a priori* recommends itself to my judgment. Counties are so unequal that you do not want a college in every county, and the grouping of counties under one centre is a much better system, in my opinion.

13187. Do you think the State is sufficiently liberal in its grants?—I should certainly say, no. I should like to see a considerable addition to the funds at the disposal of the Board of Agriculture, and I think that could be done without unduly increasing the number of separate institutions. I should like to see a larger sum devoted to the direct work of research. I think the £3,000 that was

voted on the recommendation of the Paget Committee should be earmarked for research beyond any educational provision, and I do not think the grants the department have been able to give in the past, or are able to give now, have ever reached anything like that sum for research. Cambridge and other colleges have done a great deal in that direction, and with more State aid towards research we should have a great many advantageous discoveries, not for teaching purposes immediately, but for the discovery of new scientific dogma to be taught hereafter.

13188. You have only mentioned colleges and schools. Do you think that funds from the central Government might be usefully employed in assisting counties in providing the various forms of instruction as to which we have had evidence such as dairy schools, farriery vans, and horticultural lectures, and so on, and even instruction in manual processes?—I think the counties have sufficient funds for these local purposes in the Residue Grant at the present time.

13189. They do not think so themselves?—I think the figures that are shown on page 188 of the last Government Report is conclusive evidence. They had at their disposal a sum of £508,000 in the year 1904–05, and in the year 1905–06, £542,000. Of that they applied to agricultural education between £80,000 and £90,000 and, therefore, I think the sum available is sufficient. What is desirable is that a larger proportion of the county money should be applied to agricultural education, and not so much to the other forms of technical education.

13190. The counties already have to raise rates for the purposes of secondary education, and in that case they would have to raise still more?—The matter is now complicated by the multiplication of technical institutions in the counties.

13191. (*By Mr. Acland.*) You are referring to institutions for the training of teachers?—Yes, and that it was originally suggested might be given in some normal agricultural college.

13192. (*By Lord Barnard.*) I think Mr. Acland was thinking of the training of teachers of a much more greater responsibility than agricultural teachers—the training of national teachers. I think, if I rightly interpret the feeling of the Committee, based very largely upon the evidence which they have had given to them, it is that circumstances have altered so enormously in the past few years that the County Councils, as the local spending authorities, have not got the same money, and are not likely to have the same money at their disposal in the future as they had in the past?—The counties have more responsibility thrown upon them, and there is, therefore, a larger claim upon this fund, but I think the Committee are aware, of course, of the proposals in the Budget for the present year whereby the whole matter will be probably revised, and the provisions for the counties will possibly not take the same shape. All I can say is, so far as the figures before me go the counties have a fairly large sum at their disposal, and certain counties use that very liberally and well. But certain others have done the reverse, and spend almost nothing at all. I should like to see the money more directly earmarked, so that they could not apply the money for technical education, to the relief of the rates alone, or to any other particular purpose. But we must remember the counties are very differently situated in this respect; some counties are very largely non-agricultural, and their other industries are very important, mining and other industries, and you cannot expect the agricultural industry, which is after all a relatively small one, to make its voice loudly heard in the distribution of the money in all cases.

13193. You would prefer that the State money should go principally to these large institutions?—Quite so.

13194. And not to subsidise the smaller forms of institution?—I should like to see the counties endowed with sufficient money for minor local work and for general purposes more than for educational purposes.

13195. I do not know whether your attention has been directed to a suggestion that there should be some sort of advisory council to advise the President of the Board of Agriculture and to focus the experience and views of the various counties so as to enable the central department to have more knowledge on the subject of distributing these grants?—On the parallel of the council established at the Board of Education?

13196. I think so?—I have heard that suggestion on several occasions, but I am not myself very strongly in favour of relieving a Government Department of responsibility by casting its decisions on the shoulders of outside

13192a

Major P. G.
Craigie, C.B.

3 July, 1907.

persons. In the past I think we were very glad to obtain all the assistance and information we could from private persons and county councils and others, but a council meeting to decide the grants would be very apt to degenerate into a squabble between local interests.

13197. There was no suggestion, at least we have not heard of any suggestion, that such a council should decide the allocation of grants at all, but that it should merely bring general experience and knowledge of the very wide area of the whole country down to one particular room and place it at the disposal of the President of the Board of Agriculture?—I think that such a council as that might be of service conceivably in eliciting opinions. It would be a more formal way of getting information than in the past.

13198. (By Mr. Medd.) It would not relieve the Board of any responsibility. It would be merely for placing at the disposal of the Board information from the whole of England collected and tabulated?—Quite so. I think in that form it might be of some value as a channel of information.

13199. And mutual consultation?—Yes.

13200. (By Lord Barnard.) There is another way in which that might be done, that is by increasing the staff?—Yes. I certainly think an increased staff is absolutely necessary.

13201. So that the Board's officers might be more constantly in the different localities in touch with County Councils, and so on?—Yes, in touch with each locality, but that would mean more money.

13202. I suppose the view of those who favour the scheme of an advisory Council is that it would be less costly perhaps?—It may be so, but even if you had an advisory council and any effort is to be made to have a larger amount of work done you must have more staff to inspect and supervise and a higher paid staff.

13203. You might have both?—You might have both.

13204. (By Mr. Medd.) The relationship of the council to the Board of Agriculture would be very similar to that of the County Councils' Association to the Board of Education?—Possibly.

13205. (By Lord Barnard.) You mentioned just now that you happened to be in France and that you gave some report on the French schools?—Yes. This is a copy of the report. I went over in 1887, and again in 1891, to find out the more recent developments: most of the schools I visited were in the east of France and in the north; I did not visit those in the south.

13206. You have mentioned the fact that there is a central institution in France?—Quite so. The French are very logical in their division of machinery and their machinery is, first of all, a National Agricultural University in the shape of a central institution, and then they have three large schools or colleges which are State maintained, and two or three special schools such as the Forestry School at Nancy and the Horticultural School at Versailles. Then they have apprentice schools, *ferme écoles*, *écoles pratiques*, and the *écoles professionnelles*. The apprentice schools are nearly extinct, and the *écoles pratiques* are those that are now principally relied on. There are certain other special schools which of course have been continued, but I think the Committee probably have more recent reports on that.

13207. (By Mr. Medd.) Did you visit the *école primaire supérieure* at Onzain?—No. One of the best types I got was a school near to the German frontier.

13208. What type was that?—Of the *écoles pratiques*.

13209. I only wanted to know if you had met with an *école primaire supérieure*?—Their position was defined in my report there. The *école primaire supérieure* is one of the newer class of schools. They were beginning when I was there, but were not developed then.

13210. (By Lord Barnard.) I should very much like to ask you whether you think any of this systematic scheme which you have alluded to is adaptable to this country?—I think certain features of the French scheme might be adopted here, but we have got now to face the fact that we have set up a system of our own, and it would be very costly to revert to the French system now, and, again, the French farmer is rather a smaller man. A number of the students I found at the *écoles pratiques* were sons of quite small farmers, even a smaller class than the Danes, and therefore the system would be different from ours. Their efforts have been in the direction of teaching almost illiterate peasants' sons the use of modern agricultural

machinery, which was very little known in a great many parts of France. That has had a marked result on the agricultural industry in the east and north of France. So that their system is not absolutely analogous to our own. I discussed it with the head of the Department of Agriculture when I was there, and he pointed out that our agricultural system was on a higher basis, and knowing our system he thought there would, nevertheless, be room for a great development of that system by institutions starting a little above the type of the French schools.

13211. Do you know the type of school at Basing?—Yes. That is very much like the *écoles pratiques*, and I think it forms for the inferior class of school a very good example.

13212. Would you like to see more schools of that description in England?—I should like to see more of them, but I do not say every county should have one. On the recent Small Holdings Committee that school was specially singled out and that type of school was specially recommended.

13213. Are you familiar with the school systems in any other parts of the world?—I was sent in 1893 to inspect the colleges and the experimental stations in the United States. I went over a great number of those colleges and presented another report which is also a Parliamentary Paper,* and which gives a full report on the system as it existed at that date. It is a very elaborate system, and there is a very large sum of money behind it, each of the States having grants reserved and ear-marked for the purpose of agricultural education, besides something like 15,000 dollars in every State for experimental stations from the Federal Government. Some colleges had, in addition, very large endowments given by private persons.

13214. (By Mr. Medd.) They are now in fact trying to cut the expense down, are they not?—Yes.

13215. (By Lord Barnard.) Has that been going on for a great many years in the United States, or is it a new development?—It is a system that has taken a considerable time to grow up. The first allotment out of the public funds was the Act of 1862 in the States, but it has been gradually developed. I have given a map there showing the exact position of each of the institutions. I visited certain colleges, but my attention was more directed to experimental stations and I gave a resumé of the work they were doing. I did not form altogether a favourable impression of many of those experimental stations. I think there was a great deal of duplication of work and a tendency, I thought, to advertise particular men, which is a pattern rather for warning than for example. That was in 1893. I have not had an opportunity of being in the States since then.

13216. Is public opinion in favour of the system in force there?—There are changes of opinion from time to time. The whole system of agriculture is so very unlike our own that I do not think the United States could be taken even as nearly as France as an example for ourselves.

13217. Do you think we might increase our demonstration plots?—Yes, quite apart from a certain limited number of research stations. I am sure that teaching through the eyes is worth many times teaching through the ears. That is one way in the United States of familiarising farmers with the results of experiments and getting them to go and see with the eyes what has been done in the country.

13218. Do they go very much?—Yes. Particularly in the State of Wisconsin, I noticed they had a good system of farmers' meetings all over the State there, and there is a very large attendance at the experimental plots. It is the same also in Canada. There is a good deal of that kind of thing going on there as well.

13219. As we know, the interest of farmers in England in that kind of thing has very much increased?—Yes, very much.

13220. We might with advantage develop that system and it would be appreciated?—It would; it would be a very valuable development.

13221. Have you visited any Colonial colleges?—I have been twice to Canada. My first visit to Canada was in the year 1884. Matters were in a very elementary stage then, but they were opening out the north-west, and the experimental stations were very useful there, but the experiments were limited to a great extent to supplying the kind of

3 July, 1907.

seeds and plants that were suitable for particular districts where very little was known, but there again I do not get much example for our work here. We have a great body of tradition as to what suits particular localities which in a new country does not exist and has to be manufactured, and farmers have to be taught, but here we can do without that elementary instruction.

13222. What is your opinion with regard to sugar-beet growing?—That would be a new type of agricultural industry altogether in this country.

13223. (*By Mr. Medd.*) Have you ever met Dr. Robertson?—Yes, I have met him and had very interesting conversations with him. He has done and is doing a very valuable work.

13224. He was a Commissioner of Agriculture and is now managing the Macdonald Schools in Canada. Would you recommend this Committee to invite him as a witness in the event of his being in England?—I think any information or suggestions he could make would be of great value, and Dr. Saunders I would recommend also.

13225. Yes, but he is a very old man to ask to come?—Yes, he is getting an old man, but he has a great store of knowledge with regard to this experimental work.

13226. (*By Lord Barnard.*) The information you have given us as to the United States of America refers to the period when you were there a great many years ago: you are not, strictly speaking, acquainted with the present state of affairs?—Quite so. I have had no means of following the development, although I know it has been very great.

13227. I think with your knowledge you perhaps might be able to tell the Committee whether the system of giving these grants has ever been attacked in the House of Commons, and if so whether violently or whether these grants have generally passed without much comment?—There have been two or three lines of criticism. The earliest was almost entirely confined to the question of the duplication of grants. If the Committee have followed my evidence they will have seen that there were several different avenues, first through South Kensington, then through the Treasury, and then by the Board of Agriculture direct grants, and then the County Council residue grants. So that there were four channels by which money raised from the taxes could reach educational institutions. I gave a good deal of attention to the endeavour while I was at the Board of Agriculture to get rid of the danger of undue duplication of grants given to agriculture, and as to the need of information as to which counties were giving grants for that purpose. The more general criticism was that not enough money was spent, and a desire was expressed in the House that the Board of Agriculture should have larger means if the Treasury would only allow it. There was also some criticism of a local character now and then where individuals thought their own county should get a larger share.

13227a

13228. The system of giving grants to these colleges, as a system, has never been seriously attacked in Parliament to your knowledge?—Not to my knowledge, and I think I should have known if it had been.

13229. Would you favour one channel only instead of four, all of which are still in existence, I understand—would you suggest that all the money should go through one channel in future for this purpose?—It would be very difficult to carry that out as a matter of administration. If I had a clean sheet of paper, and the whole system were being started again *de novo*, one channel in my opinion would be better than two or three, but you have the Board of Education charged with certain responsibilities, and you cannot prevent it, and I think the only effort should be in the way of preventing duplication. If it were possible to confine the money going to agricultural education through the Board of Agriculture I should prefer it, if it could be done.

13230. Are there any other points you would like to mention?—There is just this point I should like to mention with regard to the foreign examples, that there are other countries to which your attention might usefully be directed, one of which is Denmark. There are memoranda from several of those countries in the Report of the Small Holdings Committee. The Danes practice what I mentioned at the beginning of my evidence, that the first step should be that the ordinary education of a boy who was going to be eventually trained in agriculture should be thorough. Another country to be considered is Hungary. I cannot give any details of it, but I have been once or twice to Hungary, and have been much impressed with

good results from the system of agricultural education there.

13231. (*By Mr. Medd.*) There is a Report by the Essex Committee on Hungary which will be available for us?—Yes.

13232. Would not you suggest Holland?—I have no personal acquaintance with Holland on this subject. I do not know either Holland or Belgium, unfortunately. Hungary I have visited, and I have also seen the Museum and general arrangements of the College in Berlin. I have also been in Russia and seen the attempts to deal by object lesson with the different types of breeds and machinery and so on, but not through schools. The Hungarian system has this advantage, that they are the only country in Europe that has very materially increased its yield of the grain crops within the last 30 years. We have done nothing of that kind here, and the results go further than Germany or France. The figures are a little uncertain, and I am at the present moment in communication with the Hungarian Government on the subject, but I know that the wheat crop has been doubled in yield in some cases.

13233. (*By Lord Barnard.*) Is not that possibly because they are only gradually levelling up to a point which English agriculture reached a good many years ago?—Your lordship is perfectly right. They started with about 8½ or 9 bushels to the acre.

13234. (*By Professor Middleton.*) You referred to the fact that the systems in France and England were different; that England had developed in a certain direction, and that we could not therefore imitate the French system even if we wished to, but I think you will agree with me that although the systems in the two countries are different the directions in which we have developed are not so very different. We have got an institution in England, the Agricultural Department of the University of Cambridge, which I think we might compare pretty well with the National Institute in Paris, which does the same sort of work, and is competent to do the same sort of work?—Quite so, but we have not one institution for the whole country training professors.

13235. That is so, but we have the machinery here?—Yes.

13236. We can get at the same result by another process?—Quite so.

13237. We have also local colleges corresponding to the *écoles professionnelles*?—Quite so.

13238. (*By Mr. Medd.*) You mentioned the central agricultural institution in Paris?—Yes.

13239. You approved the character of the work?—I did.

13240. How far do you think a central institution of that type could carry on the work done for the National Diploma in Agriculture?—I have not had occasion to think of that myself. I think the National Diploma is rather a makeshift for co-ordinating work of the several colleges because they are so scattered and varied in the methods.

13241. Kindly turn to the map behind you. With the exception of the white area down there from Warwick to Cornwall, the country is covered with schools of the type of Grignon?—Yes.

13242. Most of those are of the higher type of local college corresponding to Grignon?—Yes.

13243. We want our white area in Gloucestershire coloured similar to those other areas. Do you not think Cirencester would form the best collegiate centre for those surrounding districts?—I have often wished it could be done in that way, but I understand the nature of its foundation and the voluntary character of its endowment makes rather a bar to attempting any Government help.

13244. Then we come to the organisation in England below the Grignon stage. Do you not think that we require for a group of counties the *école pratique*?—Quite so, and you have got them in many cases.

13245. I do not know whether you will agree with me that Ridgmont, Basing, and Newton-Rigg correspond to the lower class, the *écoles pratiques*?—Basing is the only one that I know personally.

13246. You think that does?—Yes, I think that one does for farmers attending the short courses—very practical work is done there.

13247. It really is very much like the *école pratique d'agriculture*?—Very much.

13248. The *école pratique* is a continuation course?—Yes, but the work done is something similar.

Major P. G.
Craigie, C.B.
3 July, 1907.

13249. As farming has advanced the *fermes écoles* have disappeared?—Yes, but they were useful at one time—in 1884 they were doing some very good work.

13250. I take it you have not come in contact with any *écoles primaires supérieures*?—No; I have not personally visited those.

13251. There is one at this place, Onzain, which is perfect?—I have heard of it by name, but I have not visited it.

13252. They are the type of schools which our counties could set up because they afford an opportunity of teaching in three branches, of agriculture, commerce and industry. They are of a lower grade naturally?—I could not give any evidence with regard to them because I have not inspected them.

13253. In France, of course, you have come in contact with the general work of the Boards of Agriculture and Education?—Yes.

13254. Have you found any friction between them?—There was a good deal of friction when I was there. I visited the officials of both departments, and that is one of the difficulties that arises, very much what we have met with here. I dare say they have got over it now, but just

then there was some friction. It was very difficult to define where the functions of one department ended and where the other began.

13255. I agree, but do you think the work suffered?—I think there was a little delay in starting the work there through the local jealousies of the two departments.

13256. I am in favour of everything in the nature of agriculture being in the hands of the Board of Agriculture. Your experience in France is that it works unsatisfactorily?—The *écoles primaires supérieures* would be more directly under the Board of Education in France.

13257. Yes, and the Central School at Paris would be under the Board of Agriculture—and Grignon?—Exactly.

13258. And you would put the *écoles pratiques* there?—Yes; they are so now.

13259. Where any difference exists it seems to me it is only in so far as the work is common, as for example in the *école normale*, where the Professor of Agriculture comes in to give agricultural lectures, and to some extent in the higher elementary schools—but otherwise is there any friction?—There are differences in the constitution of the educational bodies of the two countries which I think it would take too long to explain here to-day.

Mr. WINDHAM E. HALE, called and examined.

Mr. W. E.
Hale.

13260. (By Lord Barnard.) You are a member of the Lancashire County Council?—Yes.

13261. And Vice-Chairman of the Agricultural Sub-Committee of that County Council?—Yes.

13262. Is that Committee a Sub-Committee of the Education Committee?—It is representative of the three bodies—the County Council, the Harris Institute and the County Agricultural Society.

13263. Have you lived long in Lancashire?—All my life.

13264. You have been associated with the agricultural industry?—All my life.

13265. Will you kindly tell the Committee what is being done in Lancashire at present with regard to agricultural education?—The Secretary of Agriculture, Mr. Porter, will answer any details you want later, and therefore I think if I tell you roughly it perhaps will be sufficient for what you may require. The work carried on by the County Council may practically be divided under two heads—the education of those who are going to farm, and the education of those who are farming. The education of those that are going to farm is chiefly carried out at the Harris Institute and at the Hutton Farm—that is the County Council farm close to Preston, and within easy reach of the Harris Institute. At the Harris Institute the higher education is given, and at the farm it is chiefly the dairying and poultry work.

13266. You include women as well as men?—We do; I may say, to begin with, that one of our chief difficulties, both in the education of farmers and of the pupils at the Harris Institute, is the want of education; when I say the want of education I mean the want of proper education before they come there. That is, as far as the pupils at the Harris Institute are concerned, the elementary education does not meet the requirements of the Institute, and as to the farmers themselves, of course their education is practically the same.

13267. At what age do you take students?—They come at all ages, but we take them at the Harris Institute at 14.

13268. Most of them have not been to any other school except the elementary school?—No.

13269. You complain of the quality of the education which they have had at the elementary schools?—Yes, they know practically nothing of agricultural education. They simply know what they actually learn at the elementary school, and that is not sufficiently high to enable them to step straight away to the education we give them at the Harris Institute, and therefore there is some missing link somewhere.

13270. How long is it since the Harris Institute has been established?—A good many years now.

13271. Was it started by public funds, or is it endowed?—It is partly endowed and partly by public funds, the Preston Corporation, ourselves, the Board of Education

of course, and the Board of Agriculture as far as the agricultural part is concerned.

13272. You have rather touched upon this question of the fact of there being a gap, in what way do you suggest that gap ought to be filled?—That is my own idea, of course. In Lancashire especially there are many grammar schools which at the present time are doing very little work, and I think they might be used very usefully in the rural districts, both for commercial and agricultural education, which would be useful to the people who live in that district, instead of teaching farmers' sons and cottagers' sons Latin and Greek. I am glad to say Mr. Dymond, who visited one of our schools of which I am a trustee, the other day, is very anxious to meet our views on the subject.

13273. Have not most of those schools been re-modelled of late years?—They never got beyond the grammar school pure and simple.

13274. We are rather wandering out of our own line, but as the question of the education on which you base the technical education afterwards is important, we had better have it. I may tell you that I was for ten years in the Charity Commission, and I should have thought from my own experience of the last 25 years that all the secondary schools in England since the Endowed Schools Act had been re-organised?—Yes, but none of the schemes have practically got beyond the ordinary grammar school teaching.

13275. You think the ordinary grammar school teaching is not a good education to base it upon?—Not from an agricultural point of view.

13276. Are you of opinion that these schools might be made suitable?—I think they might be made very suitable?

13277. Now will you proceed to tell us further about the Harris Institute and the courses of education that are given there?—At the Harris Institute the education is the higher education required not so much for farmers, but for those who are practically going to take up the teaching of agricultural subjects to a great extent. At the present moment there are many subjects taught there which are, from a farmers' point of view, more than will ever be likely to be required, but still that is the teaching.

13278. (By Lord Belper.) You give no instruction in practical work there?—No; unless they have been farmers' sons they have had no practical work, but we have this year passed a resolution that anybody who applies to come there must show that they have had six months' practical training on a farm before they are eligible.

13279. (By Lord Barnard.) Six months' work on a farm is a very short period, is it not?—It is, but up to the present time they have had none.

13280. Most of the witnesses we have had before us have told us that they were of opinion that two years' practical

Mr. W. E.
Hale.

3 July, 1907.

work on a farm was necessary to enable a boy to receive real advantage from scientific training afterwards?—I quite agree with that.

13281. The system which has been put before us and which many of the members of the Committee have, I think, more or less in their own minds adopted, is this, that a young man who is going to farm should first of all have a good general education, that it is indispensable that he should have at least two years' practical work on a farm, probably on his own father's farm, and then that he is well qualified to receive further information and knowledge through the medium of short courses or lectures at such an institute as you have?—That is just what we require—for farmers.

13282. In your case I understand the lads go straight from the school to the Institute without any practical knowledge?—Yes, and they practically have four years' courses.

13283. (*By Mr. Latham.*) Which six months in the year do you mean they should be employed on the farm?—That is a very difficult point to settle. Our course practically runs through the winter months, so that it would be in the summer months that they would be on the farm.

13284. (*By Lord Barnard.*) How long does a student remain at the Harris Institute?—For a full course of four years; but we have short courses for those who do not wish to take the National Diploma.

13285. I do not quite understand what these students, either men or women, who have been four years at this Institute, are likely to do in after life?—The best of them, of course, hope to take up agricultural teaching as a means of livelihood.

13286. That only provides for a very small proportion of the people who want instruction in agricultural science?—Yes.

13287. It does not, except here and there, in individual cases, touch the working farmers?—It does not—I was coming to that later. I think the short courses is a system that ought to be encouraged.

13288. (*By Lord Belper.*) Do you really mean you give a long course of four years without any practical instruction in agriculture at all?—Unless they are farmers' sons there is none at the present time.

13289. What earthly good can it be to give a man four years instruction in scientific agriculture unless he has a thorough grounding in practical work?—I do not think there is much.

13290. I take your answer—That is the point where I think it ought to be improved.

13291. You do not agree with your present system, then?—I do not.

13292. (*By Lord Barnard.*) Do any of the students go through a shorter course than four years?—A good many of them.

13293. I do not mean a short course, I mean a one year, a two-year, or a three-year course, and so on?—Yes, they do. Mr. Porter will give you the figures later on. Of course, all the pupils do not come at the same age by any means.

13294. I think I had better ask you to give us your views in your own words rather than put questions to you?—Very well.

13295. (*By Mr. Latham.*) Will you just tell us what paragraph 3 means: "No practical farm work is done by the students while at the Agricultural School. Those students who are the sons of farmers usually go back to their farms in the summer, and those who are not the sons of farmers are advised to engage themselves in practical farm work when not in attendance at the agricultural school"?—The courses do not run all the year. The session only runs for a certain number of months, and during the other months there is no school held at all, and therefore they have four or five months in the year in which they could go to these farms.

13296. You have no control over them in that respect?—No control over them at all at the present time.

13297. (*By Lord Barnard.*) I suppose your school is really a scientific school with an agricultural bias?—That is practically what it is.

13298. Now will you give us your views as to the agricultural education of the older farmers?—That in the first instance was either done by lectures on the different subjects of interest to farmers by a migratory school going round teaching butter making, and by a scientist in cheese

who visited the farms and advised on the management of the dairy and the making of cheese.

13299. You state that farmers are sometimes impatient of information which is mainly of scientific interest, and which has little direct bearing on the practical work of the farm?—That is where, of course, we have found the greatest difficulty of all. Lancashire, of course, has not suffered like many parts of England from agricultural depression, and for that reason, probably, they still have gone on farming in the same way as their fathers did, and made money before them, and they have made money to a certain extent, although perhaps not so much as they might do.

13300. Are you acquainted with what has been done in other counties in England?—Yes.

13301. Do your organising people visit other counties and so on?—Yes.

13302. So that with regard to the education of older farmers, and also with regard to the work carried on in the Harris Institute, it strikes me you adopt different principles from what other counties adopt, and the result is, in other counties where different lines are followed, they do not seem to meet with the same difficulties as you meet with, apparently?—As I said before, Lancashire is a very peculiar county to deal with, and the Lancashire people are very peculiar people to deal with, but I must say myself my own opinion is that from a lecture farmers do not derive much benefit. The only way to get the farmers to understand what is being done is to show them on the ground what the results are of what you are telling them. Up to a year or two ago the whole of that was done at the Hutton Farm. That farm is near Preston, and it was a very peculiar farm with regard to soil, and in one way and another the farmers of the county did not go down there and did not appreciate what was being done. It did not meet their requirements, and that farm now is simply used, or nearly simply used, as a dairy school. We are carrying out new demonstrations all over the county, and I think that the farmers are beginning to appreciate what is being done now, and are prepared to take advantage of it; but certainly up to the present time, while the work was carried on by lectures, I do not think the farmers benefitted a bit.

13303. Perhaps you will agree with the evidence which has been given by a great many of the witnesses before the Committee that lecturing is not an ideal way of imparting information, but I wonder whether at the same time you will agree with what other witnesses have said that lecturing is not a bad method of introducing the subject to the agricultural community and making them acquainted with what can be done and of creating interest?—I think a lecture in a district certainly does that.

13304. That must be followed afterwards by other means, such as the word you mention here "correspondence," for instance?—Yes.

13305. Do you get many farmers to correspond with you?—They are beginning to do so now, but they do not like writing, and they never will write if they can possibly meet you.

13306. Do your staff go over farms at all and meet farmers on their own farms?—Yes, that is our chief thing. Any farmer now who is in any trouble, or who wishes to try experiments, has only to write, and we will go and carry out the experiments for him on his farm if they meet the requirements of the district.

13307. A great deal depends on the tact of the organiser or lecturer or whatever he is?—Everything depends on the man who demonstrates.

13308. Some get on very much better and are more capable of administering information to a farmer than others?—Yes, and that happens to be one of our misfortunes. We have had men who did not understand the people and who did not get on with the farmers.

13309. As a matter of fact, the whole thing is in process of development. You cannot consider that you have reached a stage when you can say positively this or that is a thing which ought to be done definitely?—No. As I said, I did not agree with our present system, and I think it will very likely be changed, and I have pointed out how I think it might be changed.

13310. There is nothing like experience?—There is nothing like experience.

13311. On Page 2 of your *précis* you say, "Generally speaking, it may be said that the farmers are willing to consider education which is of a practical kind and which has a direct bearing on the work of the farm." Is not that fact recognised by this Committee of which you have

Mr. W. E.
Hale.

3 July, 1907

spoken?—Yes, it is now, and it has been for the last few years.

13312. Only recently?—It is only recently that we have taken it largely into account. Of course it has been a question of cost to a great extent.

13313. Do you propose to develop this work; do you think it could be developed?—I think it may be very largely developed, but we have not the money.

13314. The Harris Institute is intended for a good many people besides agriculturists?—Agriculture is only a very small portion of the work. It is simply the way that we at the present time have to carry out our agricultural instructions.

13315. What is the acreage of this farm at Hutton of which you have told us?—About 150 acres.

13316. Is it rented by the county?—It is rented by the county, and it is where we hold our dairy schools and poultry classes.

13317. The dairy school and the poultry classes have nothing to do with the Harris Institute?—No.

13318. What dairy work do you do—have you a migratory school, or is it all done at the farm?—We have a migratory school in the county in addition to the farm at Hutton.

13319. Do you find the dairy school has been attended with success?—The dairy work at Hutton has perhaps done more for the county than any other part of our agricultural work.

13320. Do you think more butter is produced, and of a better quality?—We are practically cheese makers in Lancashire, and, although we have had a great many classes going for the last 15 years, I do not think the butter generally has been improved, simply because you have to educate the people to know what good butter is, and you cannot educate them to eat good butter. I have put better butter on the market, but because it has been made at the County Council farm and made good, it will probably be the last to be sold, because they prefer their butter made in their own way.

13321. What do you do for cheese making?—At Hutton we make nearly every known cheese, but of course our one great cheese is the Lancashire cheese—our own county cheese.

13322. Do you in any sense supply the enormous population of your county with cheese, or does it come from abroad?—A good deal of it, of course, comes from abroad. In some parts of Lancashire you will not find a bit of Lancashire cheese, everything will be American, whereas in other parts they will not look at anything but Lancashire cheese. It all depends on how the people have been educated.

13323. Is there much export trade?—I am unable to say how far cheese is sold out of the county.

13324. Is it increasing, do you think?—I cannot say; most of the cheese that is made is sold to the factors and re-sold by them to the grocers, &c., but chiefly, I should think, in certain towns in the county.

13325. What fee is paid by the students to the dairy school?—We charge no fee at all. The whole of the education at the Harris Institute is free, and we also pay the expenses of the students each day if they come by train, or we allow them 10s. a week towards maintenance if they take lodgings in the town. At the Hutton school everything is free, board, lodging, and education.

13326. How do you select the candidates?—They have to apply and they are chosen in their turn.

13327. Anybody practically who applies can get these benefits?—Anybody in the county can get the benefit of it.

13328. Irrespective of his or her being likely to receive special benefit from such a course?—Yes. Of course we have our Selection Committee, and we always make a point of taking farmers' children in preference to anybody else's.

13329. I presume the Harris Institute education is rather expensive?—The agricultural work at the Harris Institute costs just over £1,000 a year. The county pays £650 of it; the fees amount to £46; the Agricultural Department gives £150, and the Education Department £227.

13330. Do you think it is a good plan to give an expensive education to anybody who applies for it irrespective of their capacity for deriving benefit from it?—No, I do not. I am strongly of opinion that anybody who wants to use an education not for their own particular and proper trade, but to improve their position ought to pay for their education.

13331. Take the analogy of the scholarships at Oxford and Cambridge, where certain educational benefits are offered either at no cost at all, or at a very much reduced cost. In that case only the most suitable candidates are selected, and then principally by examination so as to ensure that that benefaction will not be thrown away?—Of course the great difficulty about that is the difficulty with the ratepayers. When you are using ratepayers' money, one ratepayer says, "I have as much right to send my daughter there as another ratepayer."

13332. Does the county give higher scholarships?—Yes, there are higher Scholarships which are carried away.

13333. You have often heard of the "ladder" of education?—Yes.

13334. Do you not think it would be a good plan if it could be arranged that facilities should never be wanting at the expense of the public for an exceptionally clever boy or girl to derive educational advantages by means of scholarships?—I think that is quite right.

13335. Is not that a more ideal system than the system of giving free education to everybody who applies?—I quite agree. I do not believe in giving education to everybody, whether they are fit to receive it or not.

13336. Do you do much in poultry work?—A good deal lately. People are beginning to take a great interest in it, and I think that work will develop very much.

13337. Is poultry keeping very much of an industry amongst Lancashire people?—Very much so, and it is only beginning.

13338. Is there a good market for poultry in the large towns?—Yes, we have a good market for everything.

13339. You are well provided with railways and means of communication, and it ought to be a profitable industry, if it is taken up scientifically?—I think it will be very much so. I may say in the dairy work the man who has really done more good in the cheese industry probably than anybody is the man who has visited the farms. He is not a scientist, but he is a man who understands the whole detail of the work, and when anything goes wrong at a farm a farmer sends for him, and he visits there, and may stay there a day or a week or more as required, to try and put them in the right way, and since he began he has visited something like 4,000 farms.

13340. How did that system start, do you recollect?—No. I am afraid I was not on the Committee when it first arose.

13341. Do you not think that might be extended in other directions?—I think so entirely. In fact, I moved at the last meeting of our Committee whether the whole system, especially as far as cheese making was concerned, could not possibly be extended, and if we can do it in one case we shall certainly do it in the other.

13342. I was thinking perhaps you might assist farmers in other directions besides cheese making?—We have the experiments all over the county.

13343. I mean whether the same system might not be adopted of your agricultural expert being at the beck and call of every farmer who wishes for information on some particular point?—He is at the present time.

13344. Has that been largely taken advantage of?—It is beginning now.

13345. And probably will be more so?—It will certainly be more so.

13346. I see you spend a great deal of money on agricultural education in your county out of the "whisky money" comparatively with other counties. Are you satisfied that the whole of that money is judiciously and well spent?—The £10,000 a year?

13347. Yes.—Yes, I think so: the dairy work is certainly good.

13348. You spend nearly £3,000 a year on that?—£1,200 on the dairy.

13349. (By Lord Belper.) As a matter of fact, Lancashire receives the largest grant of any county in England by far—£38,700—and Yorkshire, the next largest, is £29,000?—Yes. Of course, our agricultural work is a very small portion of our general technical work in the county.

13350. (By Lord Barnard.) What number of students do you pass through the dairy school, for instance, in the course of a year?—Since 1892 we have passed through the dairy school nearly 1,100.

13351. (By Lord Belper.) Is that in butter making or cheese making?—That is the dairy school; they are

Mr. W. E.
Hale.

3 July, 1907.

all taught butter and cheese making. For the butter alone at the migratory school there were 3,700 in the same period.

13352. With regard to your dairying, some large sum has been spent, no doubt, but I am afraid your evidence shows, as far as butter making is concerned, it is not likely to be largely appreciated by the farmers if you cannot sell your butter when made at a good price in the market?—When we first started we had three teachers; at the present time we have only got one.

13353. What is your comment on that, that one is better than three?—That the work in butter making has fallen off.

13354. I suppose that would certainly be the case if farmers find by making the butter themselves on their own system they can get higher prices than by adopting the system that is taught in your school?—Quite so.

13355. I suppose you would not be surprised to know that in colleges within my own knowledge they invariably get the highest prices in the market for the butter which is made there?—I quite agree—if you can educate your people to eat it.

13356. You agree that your system wants reorganising and reconstructing altogether with regard to the teaching of butter making?—Except in those districts where there may happen to be a demand for it, we do not hold any classes at all: we are only filling up the demand at the present time.

13357. With regard to cheese making, do you find that the farmers who have taken advantage of your teaching get a higher price for their cheese?—There is not the least doubt of it.

13358. Therefore that is satisfactory?—That is very satisfactory.

13359. Do you teach the making of any cheeses except the local cheeses that are made in Lancashire?—At the school we do.

13360. All sorts?—All sorts; Cheddar, Stilton, Wensleydale—every make.

13361. Is that teaching appreciated?—I have never found one of our farmers use it afterwards, except those that have gone out to Canada.

13362. You do not have anybody come there to learn cheese making who may be going to take up the making of a particular kind of cheese in the future, or to take up the duty of instructing in cheese making?—Some of our pupils have taken it up with the intention of becoming instructors elsewhere.

13363. But it is not much appreciated by the farmers—other sorts of cheese making?—No. While Lancashire cheese is the good article it is they are not likely to put another cheese on the market.

13364. If they can get a good price for the cheese they have been accustomed to they stick to that?—They stick to that, certainly.

13365. I suppose you agree if agricultural education is to be carried out in a more thorough manner in a large county like Lancashire that it is almost essential that you should have a dairy school, which should succeed in convincing the farmers that by a proper method of butter and cheese making and scientific knowledge they will get a better price for their produce than by going on in their own way?—We do that, of course.

13366. At present you do not reach that point in practice?—Certainly. As far as our own butter and cheese is concerned, we are at the top of the market with our own dairy farm.

13367. I thought you said that the teaching of butter-making was not successful for the reason that the people did not like it?—I said unless you educate the people; we have educated the people on our own farm—the Hutton Farm.

13368. The question is whether the public, who are after all the judges as to whether butter is good or not, will give a higher price?—The butter from our own farm always commands the highest price.

13369. You have not been able to impart that liking in other districts?—We have to people round our farm; but if you go to another district or in the north-eastern part, the people in those districts would not buy our butter because it is not to their taste.

13370. Surely in a place like Lancashire, with the largest and most populous towns in England, if you put the best butter on the market it will always fetch its price?—It is very peculiar, but it is not so. They like their own butter best.

13371. I know three much less populous towns where the butter that is made at colleges fetches the best price of any butter in the market?—It all depends on the people you have to deal with.

13372. (By Lord Moreton.) When your expert goes to give advice at a farm, I think you said, he might go to a farm for a day or a week?—Yes.

13373. Is any fee charged for that advice?—No.

13374. Have you done anything in your county with regard to the teaching of farriery?—No, we have not. We have had the question put once or twice, but we have not so far been able to do anything with it.

13375. Are you aware that in many parts of England, almost in most parts of England, very considerable work is done in that direction?—We have had reports from all the counties that have done it, to see how far we could carry it out ourselves.

13376. Is it a question of want of money, or do you consider you are good enough without farriery instruction?—It is partly a question of money and partly a question of what is the best way in which to carry it out, because the different counties, many of them, carry it out in different ways, and for the present there does not appear to be any hard-and-fast lines as to which is the best method.

13377. (By Mr. Lamont.) I see you have your own herd of Shorthorn cows at the Hutton Dairy School?—Yes.

13378. How long has that been established?—Ever since the farm began.

13379. In what year was that?—1892.

13380. Do you do anything in the way of teaching the hygiene and treatment of cows?—Not there; of course we have lectures on the subject about the county; but, as I say, lectures are not a success.

13381. Not at the dairy school itself?—No.

13382. Is anything done in the way of keeping milk records?—Yes, they are very carefully kept.

13383. Have you found over the series of 15 years by careful breeding and keeping a record that you have increased the average milk production of each cow?—Yes, I might say we have; but we have suffered terribly in Lancashire from tuberculosis. We have been struggling for years to try and get a pure herd, but I am sorry to say it has not been a success.

13384. (By Lord Moreton.) What sort of buildings have you got? Are they old-fashioned buildings and very dark?—No; they are supposed to be as modern as they can be.

13385. Are your cattle out often?—Yes.

13386. In winter?—No, not often, except to water, and when the shippens are being cleaned out.

13387. (By Mr. Lamont.) You feed them inside during the winter months?—Yes.

13388. Have you found you have been able to diminish the amount of tuberculosis during those 15 years, or is it still as bad as it was?—That is a question I cannot answer. We have had a most disappointing experience with tuberculosis. We have tried to stop it by testing and getting practically a pure herd; we bought nothing that was not perfectly sound, but after all we found that the young stock was as bad as ever.

13389. (By Professor Middleton.) You alluded to the fact that lectures were not so great a success as you would have liked in the county in the early stages?—Yes.

13390. And that you yourself believe in demonstrations rather than in lectures?—Yes.

13391. You like farmers to see rather than to hear?—Yes.

13392. I take it that those lectures, which were not very successful, were given before there had been much done in the way of demonstration plots?—Yes.

13393. So that the lecturer could not actually refer to work that had been done in the county. He had probably to deal with experiments which had been done elsewhere?—That is practically what it was.

13394. There was no local colouring about the lectures?—No.

13395. After you have had a series of demonstration plots and you send a lecturer round to deal with the results on the demonstration plots, you think they will be a success?—Yes, they will be a success. I was referring to the old system of filling a village school and lecturing for an hour

Mr. W. E.
Hale.
—
3 July, 1907.

or an hour and a half to farmers who had had no better education than they got at the elementary schools, and who could hardly remember anything that was said, or take notes, so that I came to the conclusion that it was a waste of time.

13396. You qualify your statement by saying that the lectures given in the early days were not a success?—That is so, but lectures with demonstrations given on the ground are a success.

13397-8. And even when inside, if on the results of your local experiments they would create a good deal of interest?—Yes, but not the same success as actual demonstrations and lectures on the ground.

13399. You cannot of course get all the farmers to attend demonstrations, and I was wondering whether there might not be in addition the giving of information to farmers by means of lectures in the winter upon the experiments that had been carried out in the summer?—Yes. The local education authority have only to ask for a lecturer to go down and we are only too pleased to send him, and we allow them to choose their own subject.

13400. Lord Barnard referred to the "education ladder." As a matter of fact have not a great many of your Lancashire pupils gone to other places to continue their education?—Yes, I know a number of them have.

13401. It has come to my knowledge that a good many of them go to Edinburgh University?—Yes. Of course, they have to go there to take their degree. Many of the universities, including both Liverpool and Manchester, have not an agricultural degree at all.

13402. There is no other institution to which the Harris students go?—No; not in the county.

13403. You have no entrance scholarships for the Harris Institute?—No.

13404. At one time the Lancashire County Council used to give entrance scholarships, did they not?—There are scholarships still in agriculture, but the education at the Harris Institute is perfectly free.

13405. Do they not award scholarships on the results of the National Diploma examination?—There are certain scholarships which Mr. Porter will be able to give you all the details of.

13406. What measures did you take to try to combat tuberculosis? You referred to the fact that your endeavours had been a failure?—In the first case we tested the whole of the stock on the farm and got rid of those that reacted, and of course the usual disinfecting was done. We got Professor McFaydean and Professor Delphine to advise us on the subject.

13407. You took the best advice you could get?—We took the best advice we could get, and having ascertained that our buildings were perfectly sound and suitable they advised us to buy only under the test, and so we thought the whole of the herd would naturally be sound, but the result was still unsatisfactory, the young stock reacting.

13408. Even the young stock are affected?—Yes. I should say that 75 per cent. reacted when tested, and this notwithstanding the fact that the breeding stock was sound.

13409. At what age?—Up to a year—bred out of sound cows; and I am afraid it is the same more or less all over the country.

13410. (By Mr. Latham.) I should like some more information about the lectures and the lecturers. In one place you are in favour of them, and at another place you are against them. You say on the second page: "The lectures in the county have been the means of disseminating a large amount of information, and much good has been done in this way"?—That is at the later stages. That really ought to be "lectures with demonstrations on the ground."

13411. You have been successful in getting lectures interesting by combining them with demonstrations?—Yes.

13412. And for that reason the farmers have taken an interest in them?—Yes, because they can see, whereas, as I have just said, if you talk to a Lancashire farmer in a room, say, for three-quarters of an hour, his education having been no more than an elementary school education, and hardly ever reading, except probably the papers on a Sunday afternoon—our farmers are nearly all working farmers, and work the same as a labourer—so therefore are not prepared to listen with very much interest, or to read very much after the day's work. I do not suppose any of our farmers, or very few of our farmers, read anything but the paper.

13413. Then it is really not so much that the lectures are at fault as that the farmers are not educated enough to take an interest in them?—The lectures are at fault in so far as the farmers do not care for them.

13414. Then I do not understand what you mean when you say that much good has been done in the way of lectures?—When you can have it in connection with a demonstration and show them on the ground, then the lectures have done good.

13415. That is exactly what I say. When you make the lecture so that they can understand it they appreciate it?—Yes, but you have to provide the picture.

13416. At first you gave the wrong kind of lecture, and when you appreciated what was required by the farmers and gave it to the farmers then they took an interest in them?—Yes.

13417. You say the object of the County Agricultural School is to prepare young men and women for the practical work of a farmer's life, and yet you say there is no practical agriculture taught. How do you prepare them?—As far as the farmer's own children are concerned they are supposed to know their practical work before they come.

13418. That is not exactly what you say. You say: "The object of the school is to prepare young men and women for the practical work of a farmer's life," and then in the next paragraph, the next sentence, you say, "No practical farm work is done by the students while at the agricultural school"?—It certainly does not quite agree.

13419. It absolutely is worse than that?—But I think if you go on that is rather explained: "by instructing them in the principles which underlie farming operations, and demonstrating in the lecture room and on the farm—modern and scientific methods of agriculture."

13420. I want to know, if there is no practical teaching or practical work done, how it is possible to instruct them in the principles? You cannot do that by book work?—I quite agree with you you cannot.

13421. A little further down you say: "Four demonstrators have been appointed, for horses, cattle, sheep, and pigs respectively." Will you kindly tell me what they do?—They are supposed to be some of the best judges of stock in the county, and while these classes are being held at the Harris Institute on certain days the head boys of the class are taken down to their farms, and there these demonstrators give them instruction. If it is a horse, the best horse he has is brought out into the yard and he explains the points of the horse, and, as far as possible, what a perfect horse ought to be.

13422. To some extent that is a slight instruction in farriery?—It is as far as a horse is concerned and the other animals.

13423. (By Lord Barnard.) Does this gentleman show his own horse?—Yes, he shows his own horse.

13424. Then he would be scarcely likely to criticise the points of it, would he?—He is supposed to have a perfect animal.

13425. (By Mr. Latham.) Is the gentleman who shows the horse a veterinary surgeon?—No.

13426. Is he a farmer?—He is a farmer, and is usually a judge at the local and other shows of horses.

13427. Then you go on to say: "The students will then be required to criticise other animals." In what way?—Another horse is brought out, or whatever animal is there to judge, and each boy is asked to give his views upon the points of that horse, and then the demonstrator, having heard their views, explains where they are wrong, if they are wrong. I may say the county Agricultural Society holds at their annual show classes for young amateur judges, and these boys will no doubt take part in them. We find them very successful.

13428. When you get to the cattle, how do they demonstrate the value of cattle?—The same thing is done there. They are pointed out what is as near as possible a perfect beast, and why it is a perfect beast, and then another cow or bull, or whatever it may be, is brought in, and they are asked to point out the good qualities or the defects in the same way as the demonstrator has already done with the first animal.

13429. Are they expected to say anything about the live weights?—I do not know that that has been taken into consideration, but no doubt that will be part of what they will learn.

13430. I suppose the same remarks apply to sheep and pigs?—Exactly.

Mr. W. E.
Hale.

3 July, 1907.

13431. I notice that you give £900 for scholarships. How much is that to each scholarship?—Mr. Porter will tell you that.

13432. You have tried to start farriery classes?—We have not tried, but we have had the matter under consideration.

13433. You have failed to find out that other counties have been successful in their venture in that respect?—No, but we have failed to find out which is the most successful way of carrying it out for the good of the county.

13434. Surely it must be carried out on the same lines as in the other counties?—No, because there are different ways of holding the classes in different counties.

13435. What ways have you heard have been started?—Some have a travelling van; some have held them in a town and some have held them in certain villages.

13436. I suppose we cannot deny that; that was not what I meant at all. What I mean is those who have attended these classes have all been taught to be a better class of smith, and that the shoeing they were practising was either good, bad or indifferent?—Yes.

13437. It would not much matter whether that was done by means of a travelling van or at a centre, the result is the same?—The result is the same, but the question is in a county which is the best system?

13438. There is no system so good as the travelling van?—The smithies are very far apart, you know, in our county.

13439. The van can go to each village. Are the horses so well shod in Lancashire that it is no use trying to improve the smiths there?—I think, generally speaking, the shoeing is very bad.

13440. Then you think there is a demand for that kind of instruction?—No doubt.

13441. With regard to your cheese making and the instruction that you give in cheese making, did that begin in the Institute? You make the remark that it has been found to be more convenient for the farmers to run two classes at the same time. Is that in cheese or butter making?—That is butter making in the migratory school entirely.

13442. You do not give us any information here as to how the improvement in the cheese making started. You simply say: "The teacher of cheese making travels from farm to farm and gives instruction in the farmer's own dairy. It is sometimes necessary to stay for periods of from one to five days at a farm." Then you go on to say about the new system of cheese making. Where did the new system of cheese making come from?—That is the man that I said has done so much good in the county. If a farmer's wife finds that something is wrong with her cheese, and she cannot explain the reason why, and the cheese is going wrong, she writes and asks this man to come and visit the farm. If he can point out in his first visit where the fault is, well and good; but if he is unable to do so, he stays at the farm for as long as is necessary, making notes of the whole of the process of the cheese making as it goes on, until he is able to put his finger on the spot and say, "That is the point where you are wrong."

13443. The man goes and improves her old method of cheese making, but does not start her in a new method of cheese making?—He points out where she is wrong. There is no hard and fast rule for making Lancashire cheese.

13444. You say it is sometimes necessary for him to stay for periods of from one to five days at a farm?—Yes.

13445. Surely you cannot do much in the way of improving cheese making in one day?—He may be able to put his finger on the spot that is wrong in one day.

13446. He goes to the regular cheese-maker and tries to find some defect in the dairy?—He never goes to a farm unless he is sent for.

13447. May that be in consequence of taints in the cheese?—It may be very possibly.

13448. I suppose that may come from the land as well as from the manufacture?—Of course cheese sometimes does go wrong because of an alteration in the manuring of land.

13449. If that had happened, would this man be scientific enough to find that out?—Yes, in conversation with the farmer, he would. If he could not make out what was wrong, he would ask the farmer leading questions

until he discovered. Of course cheese will go wrong if you bone your land too heavily.

13450. Do you suggest he would find that out in four or five days?—Yes, I think he would be able to find out in five days or inside of a week what was wrong with the cheese. Of course, you understand there is the cheese making at the County Council farm as well.

13451. Yes, I perfectly understand that, but you do not tell us in your *précis* what you do at the County Council farm to teach cheese making. You say something about the butter making but not about the cheese making?—We have two recognised experts at the County Council Farm, and the pupils come there and stay there for their course.

13452. You actually have cheese making going on principally at the farm in certain periods of the year?—Yes. I think I said over 1,000 pupils have passed through the cheese making course.

13453. With regard to butter making, Lord Belper drew some wonderful things from you. You say your own butter was the last butter in the market that was sold?—I say if there are no people educated to that taste in the district, your butter will be the last in the market.

13454. Where it is known the butter from your dairy school always takes prominence and always makes the best money?—Yes, where we have educated the people to eat it.

13455. If the butter from the farm makes the highest price where it is appreciated, through some unfortunate cause which you do not explain to us, your butter is better, but the people will not eat it?—Because the majority of people in Lancashire do not like good butter, but there is a minority who do like good butter, and up to the last few years they have been unable to get good butter made locally, and now they can get good butter, myself amongst the number. I could not eat the butter that many farmers make, but most people in the towns would not eat the butter I eat.

13456. May I ask where the butter comes from that supplies the Lancashire markets?—A great deal of it is made in the county.

13457. Not foreign?—There is a good deal of foreign butter too.

13458. Cannot we Britishers make it as good as the foreigners?—I do not like foreign butter, but the people in the county do.

13459. I should have thought the butter industry under the improved education was, perhaps, the finest in the world?—I quite agree with you. I think it is the finest.

13460. Even now you say Lancashire people do not appreciate the finest?—Yes, I say that.

13461. Do you think their taste is improving or not?—I think in time the taste will improve, but it is very slow.

13462. I was struck with the number of these individual students you gave us. Do not they go home and make butter in their own houses?—My own experience is that a good many of them do not.

13463. Then a good deal of money is thrown away on the butter school?—Yes.

13464. Do you not think that is very much to be deplored and very much the consequence of your free education?—I quite agree with you. I do not believe in free education myself.

13465. If these people had to pay money to come to the butter schools they might just possibly think better of it and you would keep the undesirables—I will use the word—away?—Yes.

13466. I can see very little use in public money being expended on free education which is not appreciated afterwards?—I quite agree with you.

13467. With regard to the students you get at the school, do you find the majority of them take up agricultural life afterwards?—At the Harris Institute or the Dairy School?

13468. At the Harris Institute.—At the Harris Institute about a little over 50 per cent. of the pupils are of the farming class and about 60 per cent. of the pupils go back to the land.

13469. Then the whole farming class and a few of the others go back to the land?—I will not say the whole of them, but the large proportion do.

Mr. W. R.
Hale.
—
3 July, 1907.
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13470. With regard to the general education in the county, you made the remark that the majority of the people at the Harris Institute came from the elementary schools?—I should say so.

13471. Do they go to the secondary schools?—No, very little.

13472. Are your secondary schools up-to-date and what you require?—No. I think I said to begin with that the education in secondary schools in rural districts might be made much more useful to the people in the districts in which the schools were situated.

13473. Have you any agricultural education at all at any of these secondary or grammar schools?—No.

13474. You do not advise it, I presume?—Yes. I said at one of the schools Mr. Dymond has allowed us to make a certain change which will be carried into force very shortly. It is a school adjoining my own house, and I have got them to allow this to be tried, and I think it is a step in the right direction.

13475. Do you not think it is almost impossible to carry on an agricultural side at a secondary school?—You cannot carry it on entirely as an agricultural school. You must be in connection with other branches of education.

13476. I quite agree with that, but if you have an agricultural side to a secondary school it must be kept pretty much for one part of the students, must not it?—Very much on the same lines as the modern side at a public school.

13477. (*By Mr. Medd.*) Can you kindly tell me the constitution of the Harris Institute?—It is a technical school.

13478. It teaches a variety of subjects?—It teaches every subject.

13479. Can you tell me the number of agricultural pupils?—It averages about 70—Mr. Porter can tell you more definitely.

13480. The late Chairman of your Education Committee, Mr. Wood, has done a great deal for the early education, and the promoting of nature study in continuation schools or day schools?—In day schools.

13481. So that we are face to face with this fact in regard to Lancashire that you have nothing of a permanent value beyond what may be done in a day school or a continuation school, or these varieties at the Harris Institute—you have nothing beyond that, have you, in the county?—No.

13482. Do you not think that by amalgamating with other counties adjacent to you, such as Derby and Cheshire you might facilitate your work greatly, and carry it on at less expense?—I do not think so.

13483. How are you to provide any permanent intermediate education, or any higher education in agriculture?—It all depends, of course, from what point of view you look upon the education. Do you look at it purely from a farmers point of view?

13484. Yes, purely from a farmer's point of view. You would agree with me probably that a farmer as much as a scientific man in any branch of industry deserves the highest technical instruction?—Yes.

13485. You cannot give it him at present, can you?—I do not follow you. As a farmer pure and simple I think we are quite capable of giving all the education that is required at the present moment.

13486. Where?—Do you mean practical education, or technical?

13487. No, the two are indissoluble. You cannot have your man of theory entirely fit either to guide or instruct farmers, nor, on the other hand, can you have your man, who may win prizes at the Royal, and everywhere else, capable of instructing your best farmer. The two are indissoluble—do you not follow me?—No, because I do not think that from a farmer's point of view you require the education that you do for a man who is going to be a teacher on the subject.

13488. Wherein is the difference?—I think what a farmer requires to be of use to him is a very different education from that which you would require if you were going to educate teachers on the subject.

13489. Yes, I grant you that the actual cultivator of the soil need not necessarily proceed to the same grade as the man who is to experiment and to teach agriculture. The two things are distinct, but if he wishes to learn how to experiment, how to conduct research in agriculture,

and how to be a teacher of the farmer, where within your county has he the opportunity of learning it?—Nowhere.

13490. The necessity for it exists. There is a project now—we had the witness before us the other day—of forming an agricultural department in connection with Manchester University. Such a department would be to that part of England what the department at Cambridge is to the Eastern Counties. Do not you agree with me that you not having at the Harris Institute anything so purely agricultural as Holmes Chapel, that you, Derbyshire, and the Harris Institute might co-operate—it need not entail any great expense upon each individual county—as those other counties on that map have done, round such a collegiate centre as Manchester?—I may say Liverpool are trying to do exactly the same thing.

13491. I know. I have been afraid they would want to, and they are more difficult of access than Manchester?—They both want a Chair of Agriculture.

13492. They have not applied to you?—No, but they have asked some of their citizens to endow one.

13493. For you, and for the rest of the two counties, the Holmes Chapel and Manchester are more convenient centres. You have got your own for work of a different type?—Yes.

13494. You do not want to create all these types in each county because each county has not the money to do it?—At the present time we only rent a farm, but it has been under consideration for some time, and I consider it the right thing that we should buy a farm.

13495. Yes, but from all the evidence you have given to-day the agricultural instruction at the Harris Institute carries a man a very little way?—Except on the scientific side.

13496. You really want it supplemented. Of course, a student could go to a collegiate centre, such as Reading, but if he had one within his immediate neighbourhood it would be easier for him, and easier for the combined counties. However, it is only a project, and you have not formed any opinion on it?—I do not think for a moment that we could work it in with any of our neighbours: it is inconvenient.

13497. I do not see why it is more inconvenient for a lad to get from Warrington to Liverpool than it is to get from Warrington to Preston?—I thought you were talking of Holmes Chapel.

13498. I said of a different type. Holmes Chapel is of a higher agricultural type?—Of course we do not consider it is of a higher educational type than our own.

13499. (*By Lord Barnard.*) Can you tell us what your annual expenditure is?—I have a balance sheet here for last year. The total expenditure for last year is £9,316. At the beginning of the year commencing on 31st March, 1906, we had cash standing to our credit, £620: during the year we sold produce amounting to £2,750: the vote for agriculture was £8,000: that makes £11,370. Our expenditure is divided under three heads, for the County Council farm, dairy and the poultry school the expenditure was £5,327.

13500. The dairy and poultry school is carried on at the farm?—Yes, all three are carried on at the farm. The Harris Institute, £1,348: miscellaneous work in the county including horticulture, migratory butter and cheese instruction, agricultural experiments, special grants amount to £1,069: then staff and management expenses, £1,570: that makes a total expenditure for last year of £9,316, leaving us a balance at the beginning of this year of £2,054. In years past we have always been allowed to keep and carry on the balance to the following year, but this year the County Council said we must return unexpired balances like other committees, and we have had to do so.

13501. What is the number of agricultural students in the Harris Institute?—Sixty-six.

13502. Did I understand you to say that the course was four years?—It is spread over four years I should have said.

13503. Not for four whole years?—No, I tried to explain that there were six months at least when there was no work done at the college, when anybody could go on to the farm.

13504. (*By Mr. Latham.*) Is there any difference in the first year's teaching, and the second year's teaching, and the third and the fourth year?—Mr. Porter will be able to give you the details of that.

Mr. EDWARD PORTER, B.Sc., called and examined.

13505. (*By Lord Barnard.*) What is the capacity in which you appear here?—I am Secretary of Agriculture for the Lancashire County Council.

13506. You combine another office with that. You are lecturer in agriculture, are you not?—I give lectures too.

13507. For the Lancashire County Council?—Yes.

13508. How long have you held that office?—A little over a year.

13509. Where were you before that?—I was a junior lecturer under the same County Council, and before that I was at the Midland Agricultural College.

13510. You have been in the room the whole time Mr. Hale was giving his evidence?—Yes.

13511. So that you heard it?—Yes.

13512. I will, therefore, not ask you a long string of questions but rather would invite you, if you will, to supplement or explain anything that Mr. Hale told us?—With regard to the age of the students coming to the agricultural school I have a return here which might be useful to the Committee. It shows that some came from elementary schools direct to our Institute, but there was also a fair number of others who had been some time away from school working on farms, and in some cases a few had been to secondary schools. The ages vary from 14 up to, in one case, 31.

13513. What do you consider is the usual age, not taking exceptional cases?—14, 15, 16 and 17—we get the larger proportion of students varying between those ages.

13514. You have a good many students who come as young as 14?—21 out of 131 in five years.

13515. Do not you consider that is rather young to commence education of this kind?—I do, but the proportion is not very great—21 out of 131 in five years.

13516. What number come the next year?—21 at 15 out of 131.

13517. And at 16?—21 again.

13518. 17?—23 at 17, and then there is a big drop down to nine.

13519. I understand these boys and girls come for four winters. How long is the duration of the period of instruction?—26 weeks.

13520. The other 26 weeks they are working on their farms, are they?—Yes, many of them do that—those who are the sons of farmers go back to their own farms.

13521. Do you have the sons of other classes besides farmers?—Yes, some come from professional classes and some from other classes.

13522. Do those who are the sons of farmers intend to take up farming?—Yes, as regards the majority, but some have become teachers.

13523. Do you mean elementary school teachers?—No, teachers of agricultural science; some, however, have gone to the Colonies, and some have taken up work which is not at all allied to agriculture. I have a return here showing the subsequent careers of some of the students.

13524. Supposing you have an exceptionally clever student do you hold out any prospects of him getting any further in education, say a B.Sc. degree?—Yes, two students in each year are able to win scholarships which usually take them to Edinburgh or Glasgow.

13525. A scholarship given by the Lancashire County Council?—Yes.

13526. I suppose in the usual way those scholarships are tenable at any place of higher education approved by the County Council?—Yes.

13527. Are there two each year irrespective of the number that require such assistance?—There have been two each year, but the number of students each year has not varied very much.

13528. Two are not too few, are they?—Two are given each year, and this number seems to be satisfactory.

13529. Does the going about to various farms form part of your work?—Yes.

13530. How do you manage to find time for that in addition to your other duties?—Of course in the summer time there is not a very great deal of systematic lecturing: we give lectures at the dairy school in the summer

time, but our time is not so fully employed with lecturing as in the winter, and I visit the farmers in the afternoons.

13531. You go and make yourself personally known to them and that kind of thing?—Yes.

13532. Whether they send for you or not?—In most cases we have some sort of communication before going.

13533. Do you ever attend public meetings of farmers, such as annual dinners of the farmers' clubs, if you have such things in Lancashire?—I have been to one or two.

13534. You do not go regularly?—I have not been very long in the capacity of secretary.

13535. Even when you were assistant you did not go?—No, not as assistant.

13536. Have you an assistant now?—Yes.

13537. Does he never go—is this supposed to be your particular privilege?—I go by invitation.

13538. You go a good deal about amongst farmers?—Yes.

13539. Do you think it is advisable to wait for farmers to move. Do you not think it is advisable for you to move first—however, you think you are pretty well in touch with the farmers?—Yes, I think so.

13540. I see by the return there are a very large number of small holdings of from five to 50 acres in your county—more than in any other county in England—there were 11,600 last year?—Yes.

13541. Do those men earn their living entirely on those farms, do you know?—That is a point I have no information about.

13542. There are very few large farms in Lancashire—only 83 in the whole of that large county of over 300 acres?—Yes.

13543. That is a very small proportion. Do most of these farmers work themselves on their farms?—A large proportion are working farmers. It depends on the size of the farm; the larger farmers do not, perhaps, do much actual manual labour, but the smaller ones do.

13544. They are largely grass farms, are they?—Oh, no.

13545. Are they mixed?—Yes, but there is a large number entirely arable.

13546. Is there any other point you would like to mention to the Committee?—A point was raised with regard to entrance scholarships. I might supplement Mr. Hale's evidence by saying that next year each student will be required to show that they have a fairly decent general training, and on that examination their maintenance allowances and so on will be given to them, so that the standard is being raised in that respect.

13547. They are limited to the county, I suppose?—Yes.

13548. (*By Mr. Latham.*) Are they students that come from the elementary school or the secondary school?—The standard of examination is based on what you might expect a Standard VII. boy in the elementary school to know, but in some cases it is arranged so that any one coming from a grammar school, if he could show that he had the same training, would be allowed to come in.

13549. (*By Lord Barnard.*) When you grant these free instruction privileges, do you take any pains to find out whether the beneficiary intends to take to farming?—One of the conditions on which the exhibitions and scholarships are awarded is that the candidates must be persons engaged, or preparing to engage, in agricultural pursuits.

13550. To turn for one moment again to the nature of the land, I see in the Board of Agriculture returns that of arable land in Lancashire there are only about 200 acres per 1,000, whereas permanent grass is 479—more than double—so that the proportion of grass land in Lancashire is very much greater than that of arable?—That is so, but south of Preston and south-west Lancashire there are large areas of arable land.

13551. Then there must be other parts which are almost entirely grass?—Yes.

13552. And the larger part, almost 2 to 1?—Yes, the eastern part of the county is very hilly and is largely under grass.

13553. Perhaps you can give us some further information as to the work carried on at this Institute. Mr. Latham

Mr. R.
Porter.
3 July, 1907.

Mr. E.
Porter.

3 July, 1907.

raised the point as to the paragraph in your *précis* where you say that "The objects of this school is to prepare young men and women for the work of a farmers' life, by instructing them in the principles which underlie farming operations and demonstrating in the lecture room and on the farm modern and scientific methods of agriculture." How do you prepare students for that?—Take the case of stock. You can describe to students the approved methods of feeding, for example.

13554. That is all indoor work, I presume?—I thought the point was how we prepared young men for the work of a farmer's life.

13555. It strikes me that is preparing him in a theoretical way more than in a practical way?—Take botany, for instance. You might give lecture after lecture on the cell of a plant, for example, which would not be of any great assistance to the student, but you might also select information about the plant itself which would be of great practical value to him.

13556. You do not give any instruction on the land actually on the spot?—The students go down to the County Council Farm once a week. We have a number of what we call educational plots for growing all the different kinds of forage plants. Very few crops, as a matter of fact, are grown in Lancashire, but you have in these plots the plants that are grown in different parts of Great Britain; and the lecture is supplemented by the instruction on those plots. They also go through the farm buildings, and sanitation and so on is discussed.

13557. Is there any other matter that you would like to draw the attention of the Committee to?—I do not know that there is.

13558. (By Professor Middleton.) Do you yourself teach at the Harris Institute?—Yes.

13559. What is your relation to the county farm, are you director of the county farm?—No.

13560. You are, of course, at liberty to take your students there just as much as you like?—Yes, I take them once a week.

13561. With regard to your course of instruction, the normal course is four winters?—Yes.

13562. Are the first two winters mainly preliminary, or do you begin the technical work right away?—The first winter is more or less a school course, with some science introduced.

13563. And the second winter?—That is of a more specialised kind, more agriculture and more botany.

13564. Agriculture begins as early as the second winter?—In the first winter they get some—on soils, chiefly.

13565. Then in the third and fourth?—The third and fourth are designed exactly on the lines of the examination for the National Diploma of Agriculture examination.

13566. Preparatory for the National Diploma examination?—Yes.

13567. Is your four years' course one whole course or can a student come for two years and then leave having got a fairly complete course, or must he go right through the four in order to get the full benefit of the instruction?—Some students who come for, say, the poultry certificate take the first and second years; but those, of course, who wish to be trained for the National Diploma take the whole four.

13568. How many enter your institute each year?—Fresh men?

13569. Yes.—A little over 20—26 is about the average.

13570. At the present time you have 66 in residence?—The total number, yes.

13571. Twenty-six the first year, how many the second?—They gradually go down.

13572. To about 20 in the second?—Something like that.

13573. About 10 in the third?—No, 15 or 16 in the third.

13574. The same in the fourth?—About a dozen in the fourth.

13575. Fifteen will take three years and a dozen four and the remainder a shorter course?—Yes, I may say we have a special agricultural course of two winters for practical men who are unable to take the longer courses.

13576. Do you have anything in the nature of a ten-

weeks' agricultural course?—Not at the agricultural school.

13577. Have you anything less than the 26-weeks' course?—No.

13578. (By Mr. Latham.) Have you any certificate or diploma to grant to the young men who have been with you for four years?—Yes, a diploma. They satisfy certain conditions which are set out in full in our scheme.

13579. Do you think the teaching at your farm on the whole is thoroughly appreciated in the county of Lancashire?—It is being appreciated more than it was.

13580. You are one of the lecturers, are you not?—Yes.

13581. Do you find your lectures have been appreciated or not?—Of course I think so, but, still, that is rather a difficult question for me to answer. I will say this though, that I think the farmers themselves like me to give them a demonstration on the plots better than to give them a lecture. Of course I have given both, but I think the farmers themselves appreciate the demonstration on the plots more than an actual lecture in a room.

13582. Are the demonstrations carried out all over the county?—Yes, they are, I might say.

13583. Farmers are willing to give up certain portions of their farms for you to demonstrate on?—Yes.

13584. Are any records kept of that?—Complete records.

13585. And circulated?—Yes.

13586. I do not quite understand with regard to your cheese school in the farm itself, what is the number of students you get there at a time?—About 12 or 15.

13587. How long do you keep them?—They stay for eight weeks.

13588. Your course of cheese teaching is about eight weeks?—At the dairy school—that refers to the junior courses. There is an advanced course in the summer of 12 weeks' duration, and then another course which goes on for something like 16 weeks in preparation for the National Diploma in Dairying.

13589. This instructor that goes round the county to the several farms is simply a person who goes to people fairly well educated in cheese making to rectify some mistakes they may possibly have made?—You refer now to the migratory cheese instructor?

13590. Yes.—He meets the people at market and other places, and they ask him to visit them because some little thing has gone wrong with their cheese, and he goes down and tries to put it right.

13591. I do not know that he can do very much in five days?—Supposing he gets a person whose knowledge of cheese making is very deficient, he starts them in the work and in some cases stays with them four or five days.

13592. You cannot educate a person in cheese making in four or five days?—The instructor occasionally goes afterwards to see how things are going on.

13593. Do you mean to say you can give complete instruction in cheese making in five days?—Not, of course, complete, but the results are very good indeed.

13594. We have heard that there has been a lot of bad cheese made—I am not alluding to your county itself, mind?—The system has evidently worked well, as the standard of cheese making has undoubtedly been raised very considerably.

13595. I did not think it was possible to give good or complete education in anything in four or five days?—I have said that the instructor occasionally visits the makers after they have been started by him. I might mention that he considers it advisable to leave the makers to themselves for a short time after he has given them the preliminary instruction as he is of the opinion that they master the art more rapidly when they are taught to rely more on their own efforts than on his personal daily assistance.

13596. If he has been to give instruction in cheese making, he periodically goes afterwards, whether he is asked or not, to see whether the thing is going on successfully?—Yes, he does.

13597. Is there a desire on the part of agriculturists generally to get this very little education in the way in which you have described?—Yes, in fact he told me only a few days ago that he could hardly keep pace with the demand for him.

13598. I am not surprised to hear that, because, of

course, a great many of these men that you speak about must have a very small knowledge of cheese making?—They get good prices for their products, and they seem to do the thing wonderfully well.

13599. Then they must be fairly educated before the man goes to them?—A large proportion, of course, have a good knowledge of cheese making, and the new cheese makers are in some cases those who have given up selling milk and who wish to take up cheese making.

13600. Has the dairy teaching in your school and also in the outside districts caused the price of cheese to rise?—There is no doubt about that.

13601. With regard to the remarks of the last witness about the butter, do you think that the teaching of butter making in Lancashire has not raised the price of it, or has not raised the quality of it, and is not appreciated?—The butter making in Lancashire does not seem to be a source from which the farmers get their chief income, and I think on that account, perhaps, they do not take nearly the same interest in butter making as they do in cheese making.

13602. I suppose that applies to almost every county in England at the present time, that butter making is nearly lost through the great neglect of the agricultural interest, and I think, and hope, that has been brought back to a great extent by the dairy schools going the breadth of the land. I know cases where butter has been raised 2d. a lb. owing to the visits of these dairy schools?—The price of cheese is undoubtedly higher as a result of the instruction given, but I am not so certain about the butter.

13603. Can you tell us the price you get for the butter made in the schools?

(*Mr. Hale.*) 1s. 3d. to 1s. 4d.

13604. What about the price of butter in the district generally?

(*Mr. Hale.*) The average price of butter on the Preston market is 1s. to 1s. 6d.

13605. With regard to the scholarships, where does this £900 go to?—I see there is £900 either allocated or given for scholarships?—At the end of each year, examinations are held, and those who attain to the standard required get either exhibitions or scholarships.

13606. Where are they allowed to go?—Suppose a first year's student obtains an exhibition he takes the second year's course in our own school; none of them go away until they pass through the fourth year. The two who get the valuable scholarships go away to some University.

13607. What is the value of the two highest scholarships that go to the University?—£60 usually for three years.

13608. Then all the rest of the scholarships that are won are used in your own school?—It is an additional, I suppose, prize we might call it, for good work done.

13609. If you only give two scholarships I cannot see how you can lay down £900 as being given away for scholarships, because the other is free education?—The two do not constitute the whole of the scholarships that are given.

13610. If I have made a mistake perhaps you will kindly correct me. £900 is given in the book as being expended in scholarships, and I thought I understood you to say that all the scholarships that were given were two scholarships?—The £900 represents the money allocated for scholarships and exhibitions in that year.

13611. Not used?—Yes, used, but only two students each year go outside the county in using the money; the other money remains.

13612. They cannot take money, because the education is free?—It is paid to the students.

13613. Paid to the students who come to your school?—Yes.

13614. You not only give them free education, but you give them so much money to come?—We do.

13615. (*By Mr. Medd.*) You do, as a matter of fact, allow them 10s. a week?—Yes, and I might explain that we distinguish between exhibitions and scholarships. Those who win a scholarship do not get the 10s. a week for maintenance.

13616. (*By Mr. Latham.*) I presume from the reports in this book that you do nothing in the way of research work at all?—Some of the work that is done on the plots is to some extent research work, although most of it is demonstration work.

13617. There is no idea of doing any research work, I suppose?—There has not been any very important research work started so far, but there is a little being done. I might say that a grant of £100 is made to the University of Liverpool for research work on plant diseases.

13618. (*By Professor Middleton.*) By the county?—By the county.

13619. (*By Mr. Medd.*) There is one point here in regard to these finances which I do not understand. Under one head it states that the total expense was £1,066, of which the Lancashire County Council made a grant of £650. The Lancashire County Council made a grant to you of £650?—The County Council made a grant of £650 to the Harris Institute.

13620. I do not make those figures dovetail with these figures here. At present, I must confess, the methods in which the funds are raised and expended creates some little confusion. It is probably the fault of a mistake here. Do you take lady students?—Yes.

13621. We have been under the impression, I may say, throughout the examination that you only took males. I think most of the Committee based their questions upon the supposition that the Institution was for males and not for both males and females. In regard to the housing of the females, do you make any difference from that of the males?—You are referring now to the agricultural school?

13622. Yes.—The students reside in approved lodgings in the town.

13623. That applies to males and females?—Yes.

13624. Do you think that four short courses during the winter are equal in value to two whole years?—What do you mean by two whole years?

13625. Constant attendance.—I do not know of an institution where there is such constant attendance.

13626. Yes, at Reading and at the Harper-Adams College there is. They have the usual college holidays, of course, but for the rest of the year their students attend?—Most institutions do not give more than 30 weeks in the year, do they?

13627. I am told 30 to 36 is the usual course. What is yours?—Twenty-six.

13628. You think the character of the work that can be done during the summer can be done equally well in connection with such an institution as yours as it could be at a place of higher education?—I am not quite aware what the intention of the Committee was when the scheme was first arranged, but at present it allows of the students going back to the farms while the busy times are on and of coming to us in the winter.

13629. In looking at the curriculum of your Institution, and its terms, I think you make it too cheap. I believe if you were to charge fees you would raise the place in estimation, and you would most probably get, I will not say more, but a better class of student. It is a great deal to offer anyone free tuition and an extra 10s. a week as well, and when you do that you do rather lower the appreciation in which an institution is likely to be held. I do not know whether you would be prepared to agree with me there. That is a remark I often make to Sir John Hibbert when talking over the Institute. You see my point—that you may be going too low, and people value a little more what they pay for than what is given so very freely and with 10s. in addition. Give them free tuition, and let them provide for their own keep—of course, that is only my own opinion. I notice you do nothing for the training of elementary school teachers?—Some classes in nature study were held on Saturdays about three years ago.

13630. They would probably come on a certain number of Saturdays, or every Saturday in the year?—That was done under the Agricultural Committee.

13631. Why was it discontinued?—I cannot say.

13632. Would you, speaking for the Institute, have any objection to making provision for those teachers. It is a normal feature at every agricultural college?—I might say the Education Committee is considering the instruction of school teachers in horticultural matters with a view of teaching gardening at the elementary schools.

13633. That is what I mean. Of course, one roughly speaks of agriculture, but what I mean is the training of teachers in subjects that more appropriately belong to horticulture, so that they may teach horticultural subjects in elementary day schools?—That is being considered—in fact it has practically been passed.

*Mr. E.
Porter.*

3 July, 1907.

Mr. E.
Porter.

3 July, 1907.

13634. I am glad to hear it because it is an essential, especially where an area is so urban as Lancashire. It is more needed than anywhere to develop the intelligence and observation of these children by work outside their ordinary daily life. Has your committee considered at all the practicability of combining, as I mentioned to the last witness, Lancashire, Cheshire, and Derbyshire?—I do not think so.

13635. We want to get a collegiate, or university centre, in each section of the country, and then a school of lower grade, and an intermediate agricultural school. You would have the advantage of two, Holmes Chapel and of the Harris Institute, leading up to an agricultural training and spirit in the whole of the different districts. I suppose it has never been formally considered?—Not before the committee.

13636. It is a subject that is worthy of consideration, because you see down where I am, down in Gloucestershire, and where you are in Lancashire and Cheshire, it is all white, all blank, and the rest of the counties have combined for purposes of agricultural education and mutual education, because they have co-operated, and one county may provide one school of one type and another of another, and there is no necessity for each of you to be providing the same. Do you follow?—Yes.

13637. I mean you do not want the agricultural college in every county because it cannot be supported. I will not ask you any questions about it because you have not thought of it, have you?—No, I have not thought of it from that point of view.

13638. Could the Harris Institute as a whole be converted into a practical school of agriculture?—As a whole?

13639. As a whole.—Of course, the Harris Institute teaches many other subjects than agriculture.

13640. Why I ask is because the last witness said in reference to this sub-division of counties, "we have already Holmes Chapel accessible," or why should they choose Holmes Chapel. Holmes Chapel is an agricultural school. From your reply I suppose the Harris Institute could not be converted into an agricultural school?—I think if I remember rightly you said something about the Manchester University.

13641. Yes, and then I said the two, and then he said: "And there is Holmes Chapel"?—Is it your idea to have a university department of agriculture, and also schools leading up to it?

13642. Yes—in your elementary schools and continuation schools you should, as far as possible, teach subjects bearing on agricultural matters, and do it for educational reasons. I do not care whether they become farmers afterwards, or whether they become statesmen. It is to open their eyes, and make them intelligent, in other words, for purely educational objects, as I say to further their powers of observation. Then I go a step higher to the continuation school, that is for the people who wish to study agriculture technically in its simplest branches, just as a lad wishes to know how to handle a saw, and to make a hurdle, and that kind of thing?—Do you mean the ordinary grammar school when you say continuation school?

13643. No, the ordinary continuation school. Then the school above that is the practical school of agriculture. Yours is really rather less than Holmes Chapel, but they both run *pari passu*—I am not questioning the effect of yours, but that is the grade that comes next after the continuation school?—Yes, I follow.

13644. Then the best pupils from each of those schools go to such an institution as the Agricultural Department at Manchester University. Those are men who are not studying so much for the purpose of farming as to become teachers, and to become mainly scientific researchers, and to acquire at that university a degree in agriculture

superior I should say to the one offered in London and equal to the one offered at Cambridge. That can only be properly carried out by two or three counties combining, so that the particular grade of education wanted by each must be supplied jointly. We cannot have them all go to the expense. You and Cheshire have combined in so many things that it should not be very difficult to effect further combination between you?—Yes.

13645. That is my idea, and if you would try and think it out—of course, it is only a rough idea, but that is what one wants to see—and when you have an opportunity of meeting other people connected with education you might kindly consider how it might be done. In Lancashire you are partly connected with Liverpool and partly connected with Manchester?—That is so.

13646. You are not identifying yourself with Manchester solely: you partly go to Liverpool. You will think that sort of idea over?—I will.

13647. (By Lord Barnard.) Mr. Latham and I would like to know whether you have now, either at the Harris Institute or going through your dairy courses, any students who do not belong to the county?—We have a few each year.

13648. Would you tell us whether they pay fees?—They do.

13649. Can you tell us what the fees are in each case?—At the agricultural school a composition fee of 10 guineas per session, per winter, that is, is charged; at the dairy school the fees are given on page 10 of this scheme (*handing document*.)

13650. Do you manage the finance of the agricultural department?—There are special men to deal with the finance. I do not personally deal with it except the sum totals. I just notice what is being done.

13651. I did not know whether you prepare any balance sheets or any accounts?—The balance sheet has been given in.

13652. Do you prepare it?—No.

13653. You have nothing to do with the finance?—I am supposed to know how the thing is.

13654. Are you responsible for it in any way?—No.

13655. Who keeps the accounts for you—a clerk?—Yes.

13656. There is one more point in connection with the finance. Mr. Brooke-Hunt tells us in his report here that at the Institute for the last complete year £46 were received in fees for analyses?—Yes, fees for analytical work go to the Harris Institute, not to the County Council.

13657. That is not the point which I want exactly to ascertain. What analytical work do you do. Is this the work under the Fertilisers and Feeding Stuffs Act? Is it statutory work?—In many cases the farmers send the manures directly to the Harris Institute.

13658. There are two ways of doing this as perhaps you know. One is by a formal procedure: under the Act of Parliament the duty is deputed to the County Council, and the other is an informal way in which it is done very often, sometimes by a private individual off his own bat, and sometimes through the intervention of local chambers of agriculture, and so on. Is this official work under the Act, or is it outside the Act?—Very largely outside the Act.

13659. (By Mr. Latham.) Are you actually putting the Act in force as the instrument of the County Council, or are you simply doing it as an individual directly for the farmers.

(By Mr. Brockholes.) The Act is put in force by the County Council, acting through the Diseases of Animals Committee. The Agricultural Sub-Committee is a Sub-Committee of the Education Committee.

TWENTY-SIXTH DAY.

Thursday, 4th July, 1907.

PRESENT :

The Lord BARNARD (*in the Chair*).

Lord MORETON.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor W. SOMERVILLE, D.Sc.

Mr. DAVID DAVIES, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. W. FITZHERBERT BROCKHOLES (*Chairman of the Lancashire Farmers' Association*), called and examined.

13660. (*By Lord Barnard.*) You are a Member of the Lancashire County Council?—Yes.

13661. And a member of the Agricultural Sub-Committee of that Council?—Yes; I joined that Sub-Committee four years ago.

13662. I understand you are here principally as a representative of various agricultural associations in Lancashire?—I represent the Lancashire Farmers' Association; we have 21 branches, and about 1,400 Members, and embrace a large area of the county.

13663. You yourself farm?—Yes, I do. When I left school I went to live on a farm, and I farmed over 600 acres as a tenant farmer before coming into my present estate.

13664. And you have long been closely associated with farmers?—Yes.

13665. You heard the evidence given yesterday, and I understand you would like to give this Committee your own opinion upon certain points?—I had not intended to offer evidence from the point of view of the Agricultural Sub-Committee, but as it seemed from some of the questions put to Mr. Hale and Mr. Porter that one or two misunderstandings exist, I think I had better first endeavour to remove them. The position of the Harris Institute does not appear to be understood. It is not by any means a purely agricultural institution.

13665a Briefly, its history is as follows: A good many years ago a Mr. Harris left some £250,000 to trustees to spend according to their discretion for the benefit of Preston and neighbourhood. The greater part was spent on a free library and technical schools, these latter embracing art schools, technical schools for cotton industry, building trades, engineering, teaching languages, evening classes, &c. Some years after came the days of the "whisky money," and the County Council then joined hands with the Harris Institute for agricultural teaching as far as the holding of classes was concerned.

13665b Shortly afterwards the County Council took the Hutton Farm and started developing their existing system of agricultural education, all of which, except the classes held at the Harris Institute, is independent of the arrangements with the Harris Institute. The Hutton Farm is about four miles from Preston, and it is there that the dairy and poultry classes are held. The students attending the classes at the Harris Institute in Preston have to make their own arrangements about lodging in approved lodgings. The students attending the dairy classes at Hutton are housed in what may be termed hostel arrangements at and near the farm itself. I thought it desirable to explain in this way the nature and position of the Harris Institute.

13666. The position is a little complicated?—Yes.

13667. Perhaps you would now like to give the Committee your opinion of the agricultural work done in connection with the Institute?—I think the results of the teaching, as gauged by the examinations, have undoubtedly been very good.

13668. You think that the agricultural industry is deriving some practical benefit from the Harris endowment?—Yes. The County Council makes a money contribution towards the institution, as explained in page 68 of the Board of Agriculture's Annual Report for last year. The County Council makes a grant of £650 towards the Harris Institute lectures, and they get the benefit of using the class-rooms and also certain teaching in chemistry, botany, and other subjects. It is really a joint arrangement.

13669. As I understand, you get certain advantages from their scientific teachers?—Yes.

13669a. Probably you also get the use of the rooms?—Yes.

13670. May we say, that if this Harris endowment did not exist, the cost to the County would be greater than the £650?—Yes; we should have to put up something on the lines of a college building, &c.

13671. Yours is not the only case in which such instruction as you give is assisted to a certain extent by what is technically called charity money or public endowment?—The financial arrangements are explained at the bottom of page 68 of the Department's Annual Report.

13672. Perhaps the total mentioned there does not include such extra services as the use of the rooms and buildings and the laboratories or help from other teachers?—Perhaps not; there is a sort of general give and take.

13673. I have a return here of the number of candidates who passed and failed in the National Diploma Examination, and I think it is right the Committee should know that the Harris Institute appears to have done remarkably well?—It has; I think it has come out at the top of the tree in that list.

13674. You send up more candidates than most other institutions and get a considerable number passed?—Yes. I should like to call attention to page 16 of the County Scheme of Agricultural Education, which was handed in by Mr. Hale, and which fully explains the courses given, the length of time occupied by them and the time available for the students to go and work at their own farms. Pages 23, 24 and 25 explains the whole system of scholarships and exhibitions.

13675. You also give in that book particulars of the certificates and diplomas?—Yes. I should also like to hand in the monthly report of the Agricultural Sub-Committee for June as furnishing an idea of the routine work carried out. That shows the work of the cheese instructor and the migratory dairy class. A copy of that Report can be sent to each Member of the Committee.

13676. How often do your Committee meet?—Once a month.

13677. Do you report to the County Council?—Yes, there is a monthly report to the Higher Education

Mr. W. F.
Brockholes.

4 July, 1907.

Mr. W. F.
Brockholes.

4 July, 1907.

Sub-Committee, and that goes on through them to the full Education Committee of the Council.

13678. Is there usually much discussion on the subject in the County Council?—Very seldom. The quarterly meetings of the Council are practically for confirmation of the reports of the Committees. Anything connected with agriculture goes before the Agricultural Sub-Committee, which reports to the Higher Education Sub-Committee, and then through them to the Education Committee. The Education Committee has to report to the County Council, which, however, can only criticise and not reject.

13679. What is the feeling of the principal local authority in your County on the subject?—Matters are well thrashed out by the Agricultural Sub-Committee. Some point may arise for subsequent criticism, but, as a rule, matters pass through after being properly sifted, and the Council as a whole appears to have confidence in the work of the Agricultural Sub-Committee.

13680. Is there any danger of a reduction in the efforts now being made?—Oh, no, certainly not. The County Council are doing their best to improve and develop all educational work, and I think there is no danger of their efforts being relaxed. Recently the Agricultural Sub-Committee have gone into the question of school gardens, and two of their number paid a visit to Staffordshire. The result was a recommendation to the County Council to make a start in that matter. That recommendation was adopted by the Education Committee at their last meeting, and a start is being made more or less on the lines that have been adopted in Staffordshire.

13681. In view of this Committee's enquiry I understand you were good enough to draft and forward to various farmers in your County a letter asking for replies to certain questions?—Yes.

13682. You have handed in a copy of that letter?—Yes.

13683. I understand you would now like to summarise and comment upon the answers received?—Yes; the replies to my questions vary somewhat, but on one point there is practical unanimity, viz., as regards the success of the peripatetic cheesemaking instructor, who visits cheesemaking farmers at their own farms and gives practical advice and instruction on the spot, taking into consideration the particular conditions and circumstances in each case. I may say that the cheese instructor is a practical farmer and cheese-maker, and the instruction he gives is not designed to produce any radical alteration in the general methods of making Lancashire cheese, but is rather directed towards carrying out the process of making that particular type of cheese in the best possible manner. The effect is to level up inferior makers to the standard attained by the best makers. That effect has undoubtedly been achieved, as gauged by the better qualities of cheese exhibited in shows, the price obtained in the markets and the expressed opinion of dealers, consumers, &c.

13684. I suppose one object is the economical production of cheese?—Yes; to make the best of the farmers' own surroundings and capabilities.

13685. That effort has been successful?—Most successful. The farmers in response to enquiries have unanimously testified to the benefits derived. Some of the replies to my letter have contained suggestions that this method of instruction might be usefully employed in the case of other departments more than has been done hitherto.

13686. Do you think that is practicable?—Yes, I do. Poultry keeping has been specially mentioned as lending itself to the services of a peripatetic teacher giving practical advice to poultry keepers at their own homes. I have not gathered that this suggestion has been made as an alternative to the method of giving instruction in poultry keeping by means of lectures, but as supplemental to the giving of lectures. There is ample evidence that the lectures in poultry keeping have been productive of very great good in Lancashire, and are well appreciated.

13687. Is it considered that these lessons have made poultry keeping more profitable?—Yes, through the advice given to them the farmers have been able to get a better production of eggs, and the breed of poultry has been improved. Moreover, some have learnt how to dress fowls properly for the market, and so get a better price for them. I have no hesitation in saying that advice and instruction in any branch of farming given directly on the spot by a practical person who personally understands the farmers' own views (and

possibly prejudices) and who is able to judge of the particular conditions and circumstances in each case, undoubtedly appeal more directly to farmers, as a class, than any other method of instruction. Farmers all round seem to appreciate these personal visits.

13688. You think that the more that system is extended the greater will be the confidence of the farmers in it, and the greater the advantage to them?—Yes. As a Member of the Agricultural Sub-Committee, I know that this fact is recognised, and that the various lecturers and dairy instructors do what they can in the way of visiting farms when giving courses of instruction in the different districts, but it is evident that the more that can be done in the way of personal visits and advice on the spot, the more readily will the ordinary farmer open his mind to derive benefit from the application of scientific knowledge to practical experience.

13689. That may, and probably would, mean the expenditure of more money?—I am not sure if it would necessarily do so. I have not gone into that, but anyhow I think the more work that can be done in that direction the better.

13690. The necessary consequence would be increased cost?—That might be so. With regard to the actual benefits derived from lectures, opinions vary a good deal. Much, if not everything, depends upon the lecturer being a practical person and speaking to his or her audience in terms that can be easily understood.

13691. That confirms a great deal of evidence we have already had?—A lecturer may embrace, say, a dozen points in his lecture and make 11 of them clear and telling, but if through want of practical experience he rather gives himself away on the twelfth point, his audience will be sure to remember this latter and comment freely on it to the disparagement of the whole lecture, and will either discredit or forget the other 11 points.

13692. Do you find any difficulty in filling up vacancies on your staff?—Yes, sometimes there are difficulties.

13693. No doubt candidates are numerous, but is it your experience that really good candidates are not always easy to find?—The difficulty is to get practical men with scientific knowledge. One of the greatest difficulties that educational authorities encounter is to find teachers who possess this necessary combination of practical experience, which can only be gained on a farm, with scientific knowledge and capacity for imparting it to others, which can only be gained by a course of study and training.

13694. As the system is really only as yet in its infancy is it not probable that in the course of time the supply of competent teachers will increase so as to meet the demand to a great extent?—Yes, we hope so. We hope to see more teachers recruited from the practical farmers. I might mention that our Secretary of Agriculture is a son of a Lancashire tenant farmer, and was the winner of a Lancashire scholarship.

13695. Are you a member of the Sub-Committee who make the appointments?—Yes, I am on the Agricultural Sub-Committee.

13696. You take trouble to find out whether applicants have had practical experience?—Yes, we do our best in that respect, but that is sometimes a difficulty. We have now got what we believe to be a good horticultural instructor, who is developing peripatetic work in that department.

13697. Don't you think that the practice obtains pretty generally of preferring teachers who have had practical experience?—Yes, I cannot imagine any practical Committee not taking that line.

13698. Will you now tell us what are your opinions with regard to the farm at Hutton?—As regards the benefits derived from the County Council farm at Hutton, opinions are still more varied. This farm has many rôles to fill, such as to provide facilities for teaching courses in every branch of dairy work and courses of poultry keeping, to carry out practical and experimental work for the benefit of Lancashire farmers in general and for the agricultural students at the Harris Institute classes in particular. The Hutton farm is managed by four or five members of the Agricultural Sub-Committee.

13699. Now what about the dairy classes?—The dairy classes at Hutton Farm seem to meet with general approval and have, without doubt, been the means of effecting great improvements in the dairy industries throughout Lancashire. With regard to that industry I should put first in importance the fresh milk trade,

then the manufacture of cheese, and butter as the least important of these three branches of the dairy industry as far as Lancashire farmers are concerned.

13700. Is there not an enormous amount of butter consumed in your county?—Yes, but there is keen competition from Keil and foreign butters and from adulterated butter, too. Inferior and adulterated butters seriously affect the price of good butter.

13701. Is the milk trade increasing?—It increased enormously up to about three years ago, and during the last two or three years it may have increased a little, but, I think, it is now more stationary.

13702. Are your local authorities stringent in their requirements as to the places from which milk comes?—They vary a good deal. Some are less reasonable than others in their requirements.

13703. Do you think the condition of the byres in the county has improved?—Yes, I rather think so, speaking generally.

13704. Is the work done at Hutton appreciated?—The practical and experimental farm work at Hutton does not strike home to Lancashire farmers as a class. There are certain obvious reasons for this; such as the size of the county and the expense and difficulty in visiting the farm; the great variety of soils and farming conditions in the county, many of which differ materially from the soil and other conditions at Hutton.

13705. What experimental work is carried on at the farm—is it research work or demonstration?—Mainly demonstration work. There is some research work in the way of experiments as to cattle feeding and trying the effect of different kinds of manure, but there is no analytical research work on the farm. There is a laboratory at the Harris Institute, but that is Harris Institute business.

13706. Do farmers visit the farm?—Yes. A certain number do, but Lancashire is a widely scattered county and they usually come from a limited radius. Groups of farmers are encouraged to visit upon certain days.

13707. Does the number of visitors increase?—Mr. Porter informs me that the number of visitors remains much the same year by year.

13708. We have been told of other cases where even one visit to such a farm has opened the eyes of farmers as to work which they had not previously understood, and the result has been that visiting farmers have not only come again, but have brought their friends with them?—I could only state my own impressions as to that. From the replies that I have received, it is evident that there is a great wish for educational and experimental agricultural work of all kinds (including horticulture) to be carried out at as many centres as may be practicable. The Agricultural Committee have recognised this, and have been taking steps for some time past in this direction, and the more they can develop this method of conveying information and instruction, the more effective will be their efforts to benefit the farming class as a whole. Our policy has been to reduce the experimental work at Hutton Farm, and to take parts of fields or whole fields in different parts of the County for carrying on certain experiments.

13709. Your experience leads you to consider that a better plan than doing all the experimental work at a central farm?—Yes.

13709A. Are your experiments all made under one Director?—Yes, under Mr. Porter.

13710. They are all controlled by one brain?—Yes; he frames his scheme and submits it to the Committee, and after it is approved, he is responsible for carrying it out.

13710A. So that there is no duplication, and the various circumstances of different districts are duly considered in tabulating the results?—Yes, the results are published from time to time.

13711. Do they reach the farmers' hands?—Every effort is made with that view. They are circulated. The local newspapers publish them, and they are sent round in the form of pamphlets.

13712. In connection with that subject, do you think that the Board of Agriculture leaflets circulate freely in your County?—I think so; we do our best to circulate them, through the Lancashire Farmers' Association, with our 1,400 members. We supply a list of all our farmer members and the leaflets are sent to them.

13713. It always occurs to me as a difficult question in the case of an agricultural population, who live some

distance from one another, to get printed intelligence into every home?—I think the local newspapers do good work in helping us in Lancashire. The more important leaflets published by the Board of Agriculture are reprinted in full in the local papers. One local paper which has a large agricultural circulation always gives a whole page and often more to agricultural matters.

13714. To go back for one moment, do you think it feasible, and, if feasible, would it likely be successful and useful to have all the experimental work done in the county under the ken and guidance, although not under the control, of a central authority in London, so that the results of what is done in one county might be available over the whole of England?—I should think that would be an excellent thing. I understand you to mean that the local results should be furnished to a central authority which might tabulate them, summarise them, publish them, and draw conclusions from them.

13715. Yes; comparing them with similar experiments, perhaps in different soil, climate, aspect, &c., at other places?—I should think that would be most useful.

13716. You would not yourselves have any objection to such Government inspection and guidance?—Personally, I cannot conceive any objection.

13717. You have something to say with reference to the replies to your third question?—Yes; that question was an enquiry whether the agricultural classes and teaching would be increased in value if those engaged in that work were better equipped by more attention having been given to agricultural subjects in elementary schools, and if the teachers in elementary schools in rural districts were better trained in a knowledge of agricultural subjects. I have had some interesting and practical replies to that question. There seems to be a pretty general opinion that the education given in elementary schools is framed too much on town and city lines. It is a fact recognised by everybody that the elementary school syllabus is already full to over-flowing, and that it is not possible to add other subjects, but suggestions have been made to me that much more could be done than is commonly the case in rural schools in the way of imparting rudimentary knowledge of soils, manures, feeding stuffs, &c., and their essential ingredients, making use in giving arithmetic lessons of sums such as would be of practical use afterwards in a farming career, using Readers containing useful information on farming and rural matters generally, &c. Methods of this kind would not entail any addition to the work of a child at an elementary school, and would undoubtedly not only prove of positive utility in after life but would also enable the child subsequently to profit more from agricultural lectures, or other sources of information. Though the point hardly comes within the reference of the Committee, I feel bound to voice some opinions that something might be done with advantage in the direction of obliging or inducing teachers in elementary schools in rural districts to acquire more knowledge and take more interest in agricultural and rural matters. Some teachers leave nothing to be desired in this respect, but it is not so in a great many cases.

13718. This Committee is only a Departmental Committee appointed by the Board of Agriculture, and not a Royal Commission. We have to deal with the provision now existing, but incidentally many of our witnesses have taken the same line as yourself. The question you raise is one that can only be dealt with by the Board of Education, but would you suggest that this Committee should urge the President of the Board of Agriculture to represent the point to the Board of Education?—I should certainly desire to do so.

13719. Do you think, for the sake of the subject into which we are enquiring, that it is absolutely necessary that the point should be pressed home?—Undoubtedly.

13720. That is your opinion?—Certainly. It may be outside your Committee, but at the same time there is the evidence that has come to hand, and I think it is only right to make it public in some way.

13721. What you wish us to explain to the President of the Board of Agriculture is, that unless there is something done in this direction the present instruction will not be sufficient?—It certainly will not.

13722. One word with regard to these teachers. I do not think you can, strictly speaking, divide elementary school teachers into rural and urban?—No, you cannot make a hard and fast distinction.

13723. Another point that has been made before us is, that the curriculum in the training of elementary school

Mr. W. F.
Brockholes.
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4 July, 1907.
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Mr. W. F.
Brockholes.

4 July, 1907.

teachers is already so overcrowded that it would be very difficult to press them to take up other subjects?—That may be the case, but I think if a teacher is going to teach in an elementary school in a rural district that there might possibly be one or two other subjects dropped.

13724. That we have been told by other witnesses too?—I think no doubt there are some things in the curriculum that might be omitted.

13725. If some teachers possessed these qualifications the managers of schools which essentially needed such teachers would naturally select one that had those qualifications in preference to one that had not?—Yes, I think there ought to be something to encourage that type of teacher in elementary schools in rural districts. Then with respect to the agricultural education provided by means of the Harris Institute classes, the benefits offered are of two kinds, viz.:—direct to the individuals attending the classes, and indirect to farmers as a whole through the students. The success of the Harris Institute students in competitive examinations and in their after careers is ample proof of the direct benefits they have derived individually, and can be easily gauged, but it is much more difficult, if not impossible, to gauge the benefit of the agricultural instruction at the Harris Institute to the farming class in Lancashire as a whole.

13726. However impossible to gauge it, you are perfectly satisfied that it exists?—There is no question that it exists. I should like to hand in a return which was alluded to yesterday and was left alone as it was coming in my evidence.

13727. If you please.—About two years ago a return of the then present occupation of all the past students of the County Council Agricultural School was compiled from replies from all those who could be reached; 159 replies were received and showed the following results:—

Number actually engaged			
in arable or dairy farming ...	85		
„ in occupations immediately connected with agriculture ...	18		
	103, equal to 65·2 %		
„ employed as teachers of agriculture or dairying ...	22	„	13·8
„ of students then at agricultural universities or colleges ...	7	„	4·4
„ in occupations not immediately connected with agriculture	24	„	15·1
„ dead or out of employment...	3	„	1·5
Totals ...	159	„	100·0 %

The number of 85 out of a total of 159 who have joined the ranks of working farmers does not appear very satisfactory from the point of view of raising the standard of farming knowledge in Lancashire, and also when taking the large farming population of Lancashire into consideration, especially when it is remembered that almost all the 29 who took to the teaching profession are engaged elsewhere than in Lancashire.

On the other hand, it is only reasonable to suppose that successful students will pass on some of the scientific knowledge they may have gained to relations and friends engaged in farming, and will also have stimulated these latter to make efforts to acquire further information and knowledge. I cannot see how you can possibly gauge it; but there is no doubt that a considerable amount of good has permeated all through the farming classes by the work that has been done.

13728. I see there are very few large farms in Lancashire?—That is so; there are plenty of small holdings in Lancashire.

13729. Out of just under 20,000 holdings there were only 83 above 300 acres?—Yes.

13729A. 11,000, which is more than one-half, are from 5 to 50 acres?—Yes.

13730. The average size given in the Board of Agriculture returns of all the holdings in the county is 40 acres, and that is very small?—Yes.

13731. Have you anything further to say as to the

Harris Institute?—An institution like the Agricultural School at the Harris Institute is really catering for two classes, viz.:—those who wish to become teachers, and those who merely wish to learn a reasonable amount of scientific knowledge to apply to practical experience so to produce the best financial results in their own interests. How to cater for the first of these two classes without exceeding the requirements of the ordinary farmer seems difficult, if not impossible; and I will leave it to others who are actually struggling with this problem to express opinions and suggest solutions.

13732. At any rate over 50 per cent. of the students whom you train are persons who wish to learn a reasonable amount of scientific knowledge to apply to practical experience?—Yes.

13733. A good many others in an indirect way bring the benefits of that training to bear on practical farmers as teachers or as agents, or in some way or another?—Yes, in some way or another indirectly. With regard to our agricultural classes, it came out in the evidence yesterday of Mr. Hale and Mr. Porter that the full course spreads over four years of winter sessions; but there is an arrangement which Mr. Porter could explain in detail if you would like to hear it whereby a two years' course can be utilised for those that cannot spare the time or do not wish to go in for the full course.

13734. With your great knowledge and experience on the subject can you tell me whether you are satisfied with the present conditions. You have already told me one direction in which the work could be extended, that is in the case of more visits being paid to farms; and I should like to know whether on the whole you are satisfied with present arrangements, or whether you have further suggestions for improvements or developments that you wish to offer to the Committee?—There are one or two things I would like to call attention to.

13735. We do not want to go too much into local circumstances, but are there any general principles which you think this Committee ought to keep in view in making its report?—I think the work that is done by this combination between the County Council and the Harris Institute is undoubtedly a very good work.

13736. You think a county is a good unit to begin with?—There are agricultural institutions of different types. If you want an agricultural institution of the type of an agricultural college like the Yorkshire College, the county would not be a large enough unit I think. It is quite large enough a unit for certain purposes, but not for a fully equipped agricultural college with laboratories and all the necessary staff.

13737. You know Manchester University contemplate doing some research work?—Yes; and Liverpool also. The County Council gives grants to both Manchester and Liverpool, and also a special grant not exceeding £150 a year to Liverpool for certain purposes.

13738. We have had some evidence from Manchester as to what they propose. I do not know whether you have heard of that?—No; but they are both similar institutions. I do not know whether you would like to know what proportion of the working farmer class come to these agricultural classes. Mr. Porter informs me it is a little over 50 per cent. of the students that come to the Harris Institute classes. Of course nearly all the dairy ones would be from the farming class—not quite all.

13739. We must bear in mind that you have in Lancashire an enormous population not engaged in agriculture?—We have; but, on the other hand, we have a very much larger agricultural population than the public generally give us credit for.

13740. I see in 1901 you had the largest agricultural population of any county in England except Derbyshire and Kent. They had 44,000 males over ten years of age, and you had 40,500?—Yes.

13741. (By Lord Moreton.) I see on page 23 of your scheme conditions are laid down for the agricultural scholarships?—Yes.

13742. On turning over to page 25 I see it is stated in Clause 4—“The Agricultural Scholarships will be awarded on the character of the work done by the candidates during the Session 1907-1908, together with the results of the examinations held by the National Agricultural Examination Board for the National Diploma in Agriculture.” The question I wanted to ask on that was: does that mean that all the pupils who hope to gain scholarships have to go through the National

Diploma examination?—Mr. Porter tells me it practically means that.

13743. It seems to me very definitely laid down here according to the language of the paragraph; however, we will take it that practically it is so?—Yes.

13744. The National Diploma Examination nobody can very well hope to pass unless they have a very considerable education in agricultural matters?—It is a very stiff examination.

13745. Am I right in supposing you give your scholarship rather at the end of the education than at the beginning?—Would you like to put those questions to Mr. Porter? I think that would be best, because he is the Secretary of Agriculture and more at home in such details.

13746. Very well.—I had not come up prepared to give evidence on these points.

13747. (To Mr. Porter.) On page 25 of your County Scheme, in Clause 5, there is a statement made about the conditions under which agricultural scholarships will be awarded?—(Mr. Porter.) Yes.

13748. That statement practically—I adopt the expression—is that the National Diploma Examination is taken for the test. Is that so?—(Mr. Porter.) The County Council appoint examiners of the agricultural students at the Harris Institute, and their results in conjunction with the results of the National Diploma in Agriculture are used.

13749. In conjunction; but can a Lancashire boy who has been in the Harris Institute get a scholarship unless he satisfactorily passes the examination of the National Diploma Board?—(Mr. Porter.) The students invariably pass through the National Diploma at Leeds as well as our own examination.

13750. You do not say that is a *sine qua non*?—(Mr. Porter.) Yes, I may say that it has been so, except in the case of one student in 1906 who failed to pass Part I. but was, nevertheless, awarded a junior scholarship.

13751. Your scholarships are given at the end of a considerable period of agricultural education work?—(Mr. Porter.) Yes.

13752. Instead of giving your scholarships as many more public bodies do at the very beginning to enable a boy to carry on his education, it seems to me you give it possibly as a reward at the end?—(Mr. Porter.) I might explain that our third year students go in for the first part of the National Diploma and four scholarships are given to those students which will enable them to take the course of the fourth winter session at the Harris Institute.

13753. Do I take it then that supposing a boy from your Institute passes Part I. in the National Diploma satisfactorily that that will entitle him to a scholarship, or do you make him wait until he has passed Part II. also?—(Mr. Porter.) He would have a scholarship after passing Part I., but only four scholarships are offered—not all the students, only the four best ones get them.

13754. When your student has succeeded in getting a scholarship after your course what does he do then?—(Mr. Porter.) Those who get the junior scholarships after passing Part I. of the National Diploma usually stay with us for the second part; those who get the senior scholarships after passing Part II., usually go to Edinburgh, Glasgow or Yorkshire, or some other University centre.

13755. Then I may take it that these scholarships to which we have been referring are more especially for the man who intends to go in possibly for the career of a teacher or a scientist than one who intends to try and get what living he can off the land?—(Mr. Porter.) Yes.

13756. (To Mr. Brockholes.) Do you consider that the farm at Hutton is well equipped as regards buildings?—Yes, it was a home farm and the buildings are good.

13757. The Chairman asked you what your opinion was just now about the Board of Agriculture leaflets and how they could be disseminated. Has it ever occurred to you that the Correspondents of the Board of Agriculture in the different counties could be utilised a little more than they are for that sort of work?—I am a local correspondent, and I think it is quite open to us to be well utilised in that way; but it all depends

on the local correspondent and whether he is willing to exert himself.

13758. Do you find that your neighbours recognise you as such and come to you for information?—I think so. We have one local correspondent a farmer in the Lancaster district and he has taken much interest in this question of abortion of cattle for instance, and he is doing very good work.

13759. (By Dr. Somerville.) Does Lancashire still carry on the practice that it initiated in the early years of the technical education movement of giving a so-called Junior Scholarship to any young agriculturist in the County to enable him to come to the Harris Institute for instruction?—Studentships are given to approved students which entitle the holders to free tuition at the Agricultural School.

13760. Is it not more than that? Do they not get 10s. a week to pay their expenses?—Yes.

13761. Is that continued?—Yes.

13762. So that it is really a scholarship of the value of something like £13 a year?—Yes, the course is 26 weeks in the year.

13763. So that although you may not call them scholarships they are essentially in the nature of scholarships?—Studentships, they are called. You will see them on page 20. "The Lancashire Education Committee is prepared to allow a sum not exceeding ten shillings a week to each student approved by the Committee who attends a full course of agricultural instruction sanctioned by the Agricultural Sub-Committee at the County Council Agricultural School." And on the same page you will find this: "Students must in all cases make application to enter the classes on the form set out on page 40." He applies for permission, he undertakes to attend the classes, he intends to board and lodge at Preston, and so on. That is his own undertaking. They must make application on that form, and no claim for an allowance will be entertained which has not been approved by the Agricultural Sub-Committee. So that there is practically a power of selection. Anybody may apply, but there is a controlling power of selection kept in the hands of the Agricultural Sub-Committee.

13764. May I ask you what test you bring to bear in making your selection?—There is a small Sub-Committee. I am not on that Sub-Committee, but Mr. Porter can give you that information. (Mr. Porter.) Each student has to fill in a form of application and a report is required from the head teacher of the school which the student last attended, and a certificate as to character is also necessary.

13765. So you impose tests of educational efficiency and character?—(Mr. Porter.) Yes.

13766. Do you impose the test also of the profession of the parent of the boy or of his intentions to take up farming after he has had this education? Do you in point of fact give these scholarships to boys whether they are the sons of agriculturists or not?—(Mr. Porter.) They are not necessarily agriculturists.

13767. You do not limit them to the children of agricultural parents?—(Mr. Porter.) No.

13768. You do not, I suppose, try to impose a condition on the youth receiving this support that he shall practise the profession of agriculture afterwards?—(Mr. Porter.) It is assumed that each student is engaged or preparing to engage in agricultural pursuits.

13769. What I wish to ascertain is whether the Lancashire County Council still maintain the policy that it initiated in the early years of the education movement of giving a maintenance grant to any youth in the County of Lancashire that will enable him to come to your central classes for the purpose of obtaining agricultural education?—(Mr. Porter.) Students from the administrative county only are able to get the maintenance allowance, and one of the conditions under which these studentships and scholarships are awarded is that candidates must be persons engaged or preparing to engage in agricultural pursuits.

13770. (By Mr. Latham.) In sending out your letter inviting replies to the questions you have set out here on this paper I notice No. 2 is rather well defined, but I can find no answer to it?—(Mr. Brockholes.) I think the answer to that is the general expression of opinion that the more that can be done in the way of peripatetic instructors, persons going about among farmers, and also

Mr. W. F.
Brockholes.

4 July, 1907.

[Mr. W. F.
Brookholes.

4 July, 1907.

the more lectures that be given by men of practical experience, the better it would be.

13771. Your second question is: "Can you suggest any practical methods whereby the giving of scientific instruction and information in agricultural subjects can be improved or extended?" There is not a word said in the reply where there is the slightest allusion to science?—I did not get any definite suggestions as to how the present methods could be improved except by increasing as much as possible the method of travelling instructors and having experimental plots scattered through the country.

13772. Will you kindly tell us what the feeling is in your county with regard to scientific teaching?—I think the feeling can be put in this way: that there is a general opinion that practical experience must come first, and that any scientific knowledge must come second as applied to practical knowledge.

13773. I think we shall every one of us be agreed on that point. To what extent would they welcome scientific instruction, and what sort of scientific instruction would the farmers in your county value?—As regards the improvement or extension of their knowledge of soils, manures and their application, and feeding stuffs, and practical advice respecting abortion, tuberculosis and other serious diseases.

13774. There is not a word in your *precis* as to the answers you received to that question except that you say: "The replies to my questions vary somewhat," and I thought you might give us some information as to what these varied answers are?—I do not think any of the answers gave any actual definite suggestion. The answers were to this effect: that they appreciated the spreading of experimental work so that they could readily see and understand the experiments, and they appreciated the personal visits and advice from persons able to instruct them.

13775. Is there any anxiety in the county of Lancashire from an agricultural point of view to have scientific teaching?—Yes, there is certainly an increasing desire.

13776. On the lines you indicate here with regard to soils, manures and their application, feeding stuffs, and so on?—Yes, the desire for that information is undoubtedly increasing very much indeed.

13777. And as to the purity of feeding stuffs and manures?—Yes. I have no doubt that farmers are very much more alive to the necessity of getting value for their money in manures and feeding stuffs, and are getting to know a great deal more about the comparative values than they ever were before.

13778. Is the Fertilisers Act carried out in your County?—Yes. Inspectors of Weights and Measures are appointed under the Act, and there are certain regulations laid down by the County Council for carrying out the Act. I may say the County Council had three prosecutions last year, and convictions resulted in each of the three cases.

13779. To allude to this question for a moment, it is one of the most important ones that you sent out, and there is not an answer I can see with regard to it as regards the management of cattle. Did they make any remark on it?—Some of the remarks dealt with abortion, which is a great plague in some parts, and I think they would like all the information and help, and all that is possible to be done to combat that evil.

13780. Did they express any great opinion on this return that we had made to us yesterday with regard to tuberculosis?—Not in the replies that I have had. I do not remember anything particular except generally that they would like information and advice and help.

13781. Did you hear the evidence which was given yesterday by Mr. Hale, as to the presence of tuberculosis in the County?—Yes.

13782. Can you send us some further information with regard to that and as to whether those figures are correct?—Yes, I will do that.*

13783. I may take it the diseases of animals is a question there is some interest taken in, although you have not referred to it here?—Yes. Undoubtedly that is of very great interest; and I might say the most successful courses of lectures in my personal experience were those given by a veterinary surgeon, who gave some most practical lectures—I heard some of them myself—in a simple way, and they proved of the greatest benefit in the way of giving practical advice to farmers.

13784. (By Lord Barnard.) Did those lectures include the subject of farm hygiene?—Yes.

13785. (By Professor Middleton.) I understand in your opinion the key to the whole situation is that the confidence of the farmer in each county must be gained?—Certainly.

13786. And that it is essential that you should have well-trained and also experienced instructors for the counties?—Yes.

13787. With regard to Hutton farm, that is managed by a Committee?—Yes.

13788. Is that Committee composed of men who are practical farmers?—There are two or three practical farmers on it.

13789. And chosen because they are recognised as being amongst the best practical farmers perhaps in the neighbourhood?—Yes; they are selected as having practical farming experience.

13790. What is the cost of running the Hutton farm?—That is the balance-sheet for the 12 months ending April 1st, 1907. You will find it all classified there. (Handing document.)

13791. This was put in yesterday?—It was.

13792. Your experience is that local experiments are likely to be more useful in Lancashire than a central farm?—Certainly.

13793. I understand that your central farm is not equipped in any way with laboratories; you have no chemist or botanist attached to it?—The permanent dairy and poultry schools are located on the Hutton farm, and for these suitable class rooms and a chemical and bacterial laboratory have been provided. Analytical chemistry is carried out at the Harris Institute.

13794. I understand that 50 per cent., or rather more than 50 per cent., of the students in your institution are the sons of practical farmers?—Yes, they come from that class.

13795. I find that 83 or nearly 84 per cent. of those whom you turn out become agriculturists; they either take up teaching or take up practical farming?—Yes. You are including all except the 24 and the three in the return.

13796. Yes; 83·4 either become teachers or go back to the land?—Yes, if you deduct the teachers, barely 60 per cent. go back to the land.

13797. You expressed the opinion that the figure was not quite satisfactory?—Only from the point of view of the total number of students as compared with the total number of the farmers in Lancashire.

13798. It seems satisfactory to me because 50 per cent. of those who go in are not agriculturists, and yet you turn out 84 per cent. who take up agriculture in some form or another?—I suppose they would not go in for it unless they had a natural bent in that direction.

13799. It seems quite satisfactory?—It is satisfactory from the point of view of individuals attending the classes.

13800. It is not satisfactory having regard to the total farming population of Lancashire; but from the number you take in and the number you turn out it is quite satisfactory?—Yes. You will notice what I say. "The number of 85 out of a total of 159 who have joined the ranks of working farmers does not appear very satisfactory from the point of view of raising the standard of farming knowledge in Lancashire, taking the large farming population of Lancashire into consideration, especially when it is remembered that almost all the 29 who took to the teaching profession are engaged elsewhere

* The Witness subsequently forwarded the following statement to the Secretary:—

The figures referred to by Mr. Hale related to certain lots of cattle that reacted under the tuberculosis test at Hutton and one or two other places some 10 years ago, and personally I do not think it safe to make positive deductions from percentages of reactors as to the existing prevalence of tuberculosis in cattle generally, and still less as to the extent of its presence in forms dangerous to human beings. In my opinion it is only data derived from general and systematic inspection by competent persons of cattle after slaughter that can be relied upon in estimating the prevalence of tuberculosis in the country as a whole, or in any given area.

than in Lancashire." It is quite satisfactory from the point of view of individuals.

13801. (*By Mr. Medd.*) The balance-sheet you have just put in represents the last statistics, does it not?—Yes.

13802. It varies very considerably from the statistics issued by the Board of Agriculture, so that the questions which I had intended to ask you are no longer necessary. The only observation I would make is that the amount expended upon farriery and veterinary science appears very small—£8?—I agree with you.

13803. It is to cover a big county like yours?—Yes.

13804. However, some of it may be included in other accounts. That may be so?—I understand that in that particular year that £8 for farriery and veterinary science was paid for the lectures to which I made special reference, given by a practical veterinary surgeon; there were other lectures, but they do not appear in that year's payments.

13805. In your *précis* you introduce a paragraph about the defective training of elementary school children?—Yes.

13806. I think Lord Barnard recommended you to refer it to the Board of Education?—I think it would be advisable for you as a Committee to present this matter yourselves to the Board of Education.

13807. May I ask you, in addition, if your very influential Education Committee will make the same representation to the Board of Education?—Our Agricultural Sub-Committee?

13808. I should say the whole Council?—I cannot answer for the Council.

13809. Of course, you cannot pledge them yourself, but you might try to induce them to do it?—Yes.

13810. With regard to the inefficiency of the ordinary rural teacher, your county might select a few to get an additional third year's training at some horticultural or agricultural college?—Yes.

13811. Rules are not yet issued, I might say?—No. The whole question of rural education is now being considered by a sub-committee, and it is receiving the consideration of our County Education Committee.

13812. You might inform them that regulations to enable teachers to have this third year's training at an agricultural or horticultural college will be issued shortly?—I will be very pleased to do so.

13813. Of course they might not know when your committee sits?—The Education Committee meets the third Monday in every month.

13814. In regard to farming in Lancashire, are there any co-operative associations for farming?—Yes, there are five agricultural co-operative societies in Lancashire and one just on the borders of Yorkshire and Lancashire for buying purposes. Three of them are for purchasing farming requirements, one of them partly for purchasing and partly for working an auction mart, and two for dairy purposes.

13815. That is, selling?—Yes.

13816. Do you think that these co-operative societies can in any way be said to arise from education, or that the societies themselves create a demand for education?—I think the co-operative societies greatly help agricultural education, because there is no doubt about it that through the co-operative societies the knowledge

of the value of manure and feeding stuffs gets brought home to farmers.

Mr. W. F.
Brockholes.

13817. As soon as you teach a man how to earn a penny he wants to know how by better methods he can earn 2d.?—Yes; I think it is a most useful channel of conveying information.

13818. Of course, when it is once started in Lancashire, it will go. In one remark you made you said that your students had no university to go to for an agricultural degree?—We have no agricultural college in the county such as the Leeds college, but at the same time I think I am right in saying that the whole course at the Harris Institute lands its students very high up.

13819. It gets them up to the National Diploma?—Yes.

13820. Would you not be prepared to support the movement in favour of the agricultural department in Manchester?—I should not like to commit myself off-hand to an opinion. We are doing very good work on certain lines, and I should not like off-hand to commit myself to any positive expression of opinion with respect to any change of policy.

13821. No; but Manchester will be offering opportunities which you cannot, in other words research for post-graduate men and an experimental farm. What I have in mind is the combining of Lancashire and Cheshire and Derby for the purpose of providing all types of agricultural education, so that any resident within those counties can profit by them?—Derbyshire would not work in with Lancashire at all events.

13822. Derbyshire has nothing at present?—No; but Derbyshire would work in better with Nottingham.

13823. Of course, that is for the Derbyshire people to consider?—Yes; you see how Derbyshire runs right away along Nottinghamshire and from Lancashire.

13824. Yes; but my first idea was Stafford, and my next idea was Derby?—There is the Harper-Adams College for Shropshire and Staffordshire.

13825. Yes; there is no reason why Harper-Adams should not affiliate with Manchester. My aim would be to get that part of the country better provided for?—Is there a need for that? You have got facilities now offered by the Agricultural Sub-Committee of Lancashire and the Harris Institute combined; you have got Holmes Chapel for Cheshire; and then when students get beyond those institutions by attaining scholarships, they can go to Edinburgh or to Leeds or elsewhere.

13826. The expense would be greater than at Manchester, and I should have thought you would have preferred to have had Manchester as an adjunct to your own local university, where you would be in touch with the men, and where you would know the professors. However, that is a matter only for consideration and to be definitely brought forward when Manchester has its agricultural department to offer you?—Is not that generally a matter of policy? That is hardly for an individual, but more for the whole of the county committee to consider and express an opinion upon.

13827. Quite so; but you are here to-day in a representative capacity, and one hopes that you will spread any views which you may hear here with which you can agree?—Yes. Before retiring I should like to put in this statement showing the occupations of the parents of the dairy students. (*Handing document.*)

Mr. A. E. HUMPHRIES, called and examined.

13828. (*By Lord Barnard.*) You are the Chairman of the Wheat Growers' Association?—Yes.

13829. Do you know the terms of reference to this Committee?—I do.

13830. You are anxious to give the Committee the views of the Wheat Growers' Association on this subject?—It might be well if I were just to state my official position as President of the National Association of Millers, and that I am the originator of what is known as the Home Grown Wheat Committee. I might also

add as one of my qualifications that I am farming for profit.

13831. Whereabouts do you farm?—In Surrey.

13832. A large area?—About 300 acres.

13833. Principally arable, I suppose?—A mixture, but mostly arable. When I was asked to come here, I inquired whether this Committee was confining its attention to facilities for imparting knowledge previously acquired to students or scholars, because I do not feel competent to deal with that side of the question at all.

Mr. A. E.
Humphries.

4 July, 1907.

Mr. A. E.
Humphries.

4 July, 1907.

I have done no teaching at all, and I do not want to have anything to say on that side of the question, but as the Committee seems willing to take the wider view, that is to say the necessity or the wisdom of doing research work, I am glad to come and say what I think on that subject.

13834. I do not know who gave you to understand that. It really is a little outside the scope of our inquiry, but at the same time we feel that it is a subject that we cannot exclude altogether?—Might I interject that I will be brief. I will not take up your time very long. What I want to say really centres round two propositions. The one is that in my belief there is an immense amount of profitable research work to be done. The second proposition is this: that it is unreasonable and unprofitable to expect men who have to teach and do "hack" work of various kinds for a living, and to take up high-class research work at the same time.

13835. Their province really is to disseminate the information that has been gained by others in research work?—Yes. Then dealing with the point as regards the necessity for research work, of course the outstanding case that appeals to anybody, the man in the street if you like, is such a case as that of Lawes and Gilbert. The work that they have done stands to their everlasting credit, but it seems to me distinctly discreditable to a nation of our standing that we should expect such work as they have done to be done, as it has been done, on private resources. I do not come here to advocate any rash or very great expenditure, but I do think that it is wrong to expect the work of the nation to be done by private individuals in the way that those two men did it. There is other work to be done in that direction, some is being done by individuals simply of their own initiative, and that is not creditable to the nation, and shows us up, very badly as against other nations of the world, who take the view that I myself take, that research is a national matter and ought to be subsidised by national funds. If research is not going to be profitable, it should not be done, but I take it nobody in existence would say that there is no profitable research work to be done. Might I take for instance this work with which I am more intimately connected, and of which I know most. Take the question of the quality of English wheat. It is very difficult to arrive at a true comparison between the value of different wheats, because terms differ, and weights and such things, but the English farmer has had to accept considerably less money for his wheat than the Manitoba farmer and farmers in similar positions, and that is due almost entirely, as we are proving, to ignorance. The English farmer stands at the top of the tree as regards yield, and an immense amount of work has been done in connection not only with wheat but with other things as regards yield, but it seems to me as a general proposition that when it comes to the question of quality there is an immense amount of work that ought to be done. The whole crux of the question from my point of view, so far as the value of English wheat goes, is simply the lack of certain qualities which we are proving can be produced in England. A great many years ago the National Association of Millers began to move in the matter, and appealed to the existing agricultural societies. Those societies simply ignored the matter entirely and took no notice of its appeal. It then applied to seedsmen, and the seedsmen said:—"All the farmer is troubling about is a large yield." I might also say that speaking generally port-millers do not care now-a-days much about English wheat at all. So that it amounts to this: that the work that we have been doing with every prospect of success would not have been done if it had not happened that there were a great number of millers who were also farmers. It is not an uncommon thing to find a combination, in the inland districts at any rate, of a man who is at the same time a miller and a farmer, as I am myself, and if it had not been for that happy combination the question of raising the quality of English wheat would not have been taken up at all.

13836. You use the word "we" very often. Who is "we"?—In this particular case "we" means the Home Grown Wheat Committee. We started the work. First of all, we got into contact with Wye College, and then we got into contact with Rothamsted, and, very much to our benefit, we got into contact with Cambridge University also, and we have developed a very wide field of what is *bona fide* research work. As a result I think we can safely say we are going to produce wheat

in England that will be worth some shillings a quarter more than the average quality of English wheat. That I most fully believe, and have the best of reasons for believing, but that would never have been possible if it had not been for the research work that has been carried out, research work that the agricultural societies would not undertake and do not undertake, and if it had not been for Rothamsted and Wye and Cambridge collaborating with millers the work would never have gone forward. I am taking that as an illustration of what I mean; it is typical. There is plenty of other work to be done and that ought to be done, and if some central association or body who would undertake research work were established at whose disposal were put the best possible brains at present at work in that direction, so that they could be entirely relieved from the necessity of having to carry out all this other work that I have referred to as well, it would be a most excellent thing, and a thing that is a matter of national concern in my view. Take again my own case as a farmer. I am troubled with scab in potatoes. It appears that some land that I have has been known to raise scabby potatoes for the last 20 or 30 years, not every year alike; it varies a little. Another thing I am troubled with, I have got two fields which two years out of three—I do not think I am stating it too highly—give us crop failures. As I am a Surrey farmer and am in touch with Wye College I straightway applied to them, and I should like to say whenever I have applied to the Wye College people they have always been extremely willing and anxious to do anything that would assist. At any rate, I applied to them, and they immediately came down or within a very short interval and began to look into these questions for me, and we were seeing what we could do to remedy these things, to ascertain if we could the cause of the scab in the potatoes and if we could not possibly arrive at some method of dealing with the bad land, but the position is this: that they have come down and seen me and had a discussion, but they have had to go back to the College, and switch off straight away on to teaching youngsters the elements of agriculture. That is a very desirable thing, and I have nothing whatever to say against it; but the real point is this: that if the scientists were on the staff of a central body to tackle things like that, and that alone, and not have to switch off on to all kinds of other duties, it would be infinitely better and the work could be done and be done well. I do not myself see how you can satisfactorily do the work that has to be done in the way of research if a man has to spend the greater part of his time in teaching.

13837. You do not go on to tell us what these gentlemen who came down from Wye College did in your case. Is that the end of it? Did nothing more happen? You told us that they went back and switched off on to teaching youngsters, but of course that is only an assertion that you make because you have no personal knowledge as to whether that is what actually happened or not?—It amounts to this. They took one sample of the soil 10 months ago, and they have examined it, and they say it is quite obvious there is something wrong, but they cannot say what, and whether they are prosecuting that inquiry or not I do not know, but my suggestion is that they have not the time to do it even if they wished.

13838. That is only your own suggestion. They have not told you that that is the fact, have they?—No, that is only my suggestion, but I think I am right in saying at any rate that if a man has to do this research work, and has to do teaching at the same time as well, it is only natural that he has not sufficient time to give to it. The whole point of my suggestion is that these two things are typical of points which occur in ordinary practice, and it seems to me that a great amount of research work should be going on in the country; and the next thing is that to ask a College such as Wye College, which is crowded out with scholars, to take up research work in addition to their ordinary teaching duties is asking them to do things that they should not be asked to do, and things that should only be given to such people as specialists as a special subject. I happened to hear a mention this morning of abortion in cows. A connection of mine farming in Surrey is pestered with that complaint. But to go back to wheat. We have not nearly finished our work in that direction yet. Take the one point of rust resistance, that is, wheat which shall be resistant to rust or resistant to bunt. That is a subject that means highly technical work—it is a sort of work that I grant you is already being attended to at Cambridge University, but it is a thing that should come within the scope of a

13833a

13835a

13838a

Mr. A. E.
Humphries.
—
4 July, 1907.
—

national movement. You get in Australia, for example, a Government Department dealing with such things. The late Mr. Farrer has done a great amount of work on that line. Cambridge has opened up fresh lines altogether, and is likely to make a very considerable improvement in the matter of rust resistance. There is hardly a wheatfield in the kingdom that does not suffer much or little from rust, and you want to carry out research in order to arrive at a wheat that has an inherent tendency to resist bunt and rust.

13839. I think you have proved sufficiently to us the necessity of further research, but I think you will agree with me that it is scarcely fair to compare this country with our colonies inasmuch as the development in this country has been going on for many centuries, and a great many problems settled, whereas Australia, which colony you mentioned, is practically an entirely new field, where a variety of problems are not yet settled and where they require the need of much more attention being paid to them than is the case in this country?—My answer to that is that the experience we get from actual practice is that we do not know as much as we ought to do of the things that are to be known; we have got definite evidence of that.

13840. Do not you think it is possible in a newly opened up country like Australia it is more necessary to do this kind of work than in an old country where a great many of the problems have already been settled?—I do not take that view at all, my lord.

13841. Do you or do you not know as a matter of fact that the question of further research on these points is being very carefully considered, and has for some time past been under the consideration of the Board of Agriculture?—I know unofficially that it has been under consideration, and if anything I can say will help that forward so much the better.

13842. When you say unofficially have you seen any documents or papers?—No.

13843. You have only heard it talked about?—That is so.

13844. You are aware that something has been done. Have you approached the Board yourself on the subject?—On the specific point as to whether research should be undertaken in a general way, no; as regards the question of the improvement of wheat, yes.

13845. (*By Professor Middleton.*) You have yourself received grants for specific purposes?—Yes.

13846. You are not speaking on behalf of yourself only; you are speaking of these other bodies with which you are connected?—As a matter of fact I was only telegraphed for yesterday, and I have no mandate so to speak from the bodies or to pledge them in any way, but I have no doubt whatever that I am representing the views of millers generally.

13847. From the point of view of the prosperity of the agricultural industry you wish to impress upon this Committee the absolute necessity for a greater amount of research work being carried out in this country?—Yes.

13848. That is your first proposition, and in the next place you consider that that research work can only properly be conducted by people who devote their whole time to it?—Yes.

13849. (*By Mr. Latham.*) I have no doubt you recollect Mr. Hall reading a paper before the Farmers' Club some time ago on the very subject you are talking about?—Yes.

13850. That was probably the thing that brought the matter more prominently before farmers than anything that had ever happened before?—That is correct.

13851. You have stated, and I agree with you, that the great cause you have so much at heart should become a national one?—That is right.

13852. And that some help should be given to such people as yourself and others who are working with you to bring to a satisfactory conclusion the question why foreign wheats have such a great advantage over our own?—That is it, and we do not consider the question of the strength of wheat is the only thing. We think the health of the plant, the rust and bunt resistance, the quality of the straw, and everything should be taken into account, and we are of opinion that in all those respects great improvements can be made.

13853. In consequence of the very large importation of foreign wheat into this country you will agree with me that our English wheats have declined?—In quantity.

13854. Both in quantity and in quality. I will put it the other way. There has been more notice taken of growing wheats that yield than of the value of wheat with regard to its strength and so on?—Yes. I would like to amplify that. The general scientific conception until within the last five years was that it was impossible to combine yield and quality. The work we have been undertaking, and it is very far from being finished, goes to show that that was a mistaken scientific conception altogether, and that it is possible to combine yield with quality. The whole drift of the seedsmen's work, because it was practically all seedsmen's work, was for them to study yield as a means of increasing the financial return. We say that was a mistaken scientific conception, and although you have certainly increased the yield you should increase the quality simultaneously, and that is a question of research work.

13855. That is because the foreign wheat is so strong, and the Englishman could not compete with them in that respect, so that he has grown a weaker wheat, but of greater produce?—That is right.

13856. I suppose I may take it that our climate is very much to our disadvantage?—One's ideas on that begin to wobble. We are proving that certain wheats appear to be able to withstand unfavourable climatic influences.

13857. Do not good and strong wheats suffer from such seasons as we are passing through more than the weaker ones?—To a certain extent, but any proposition of that kind must always be considered relatively. •

13858. That arises from our ignorance on the subject?—That arises from ignorance. Of course a bad season is going to reduce the quality of wheat, but perhaps not to the extent that is thought, because assuming you have a good wheat and a bad wheat in England the fact of bad weather affects both, so that the relative superiority of the better wheat would still remain.

13859. That is one of the great works that you are devoting your energies to?—Certainly.

13860. With regard to your remark about scab in potatoes did you ever mention that to the Board of Agriculture?—No.

13861. Have you any Correspondents of the Board of Agriculture in your neighbourhood?—Yes, I believe we have.

13862. I am rather afraid you do not worry them much when you get into little troubles like that?—That is quite right.

13863. In all probability if you had reported this to the Board of Agriculture some notice would have been taken of it?—It is possible. I am not in the faintest degree attacking the Board of Agriculture, you understand; quite the reverse. They have shown a very great interest in the work that I have at heart, but, as a matter of fact, I did not correspond with them with regard to the scab in the potatoes.

13864. I am a Correspondent myself, and if I had suffered as you appear to have done, I should have applied to the Board of Agriculture, and tried to find out what my potatoes were suffering from?—Well, if I had applied to them they would probably have referred me to Wye College, and I went to Wye College direct.

13865. You do not consider that these colleges are not taking up this question?—Oh, no.

13866. You look upon them as great adjuncts in this particular work?—Certainly.

13867. The object of your coming before us to-day is to try and show that the wheat-growing industry in England will be improved very much by the great work you are carrying out?—I do not want to blow my own trumpet.

13868. I can blow it for you. We are sitting here to try and get more help from the Treasury for agricultural purposes, and we look upon it that the work you are carrying on is one of those purposes?—Quite so, and I look upon it as typical of what could be done in other directions.

13869. (*By Professor Middleton.*) I quite agree with you as to your general views with regard to the necessity of research, but I am afraid I cannot accept your second

Mr. A. E.
Humphries.
—
4 July, 1907.

proposition, which is, that in order that we may have satisfactory research we must separate education and research. Upon that may I ask you, first, who it was that has produced this new wheat to which you have been referring—who made the crosses?—Cambridge, undoubtedly.

13870. Who did it?—R. H. Biffen.

13871. Who is it that proved the inheritance of disease to which you refer?—R. H. Biffen.

13872. May I ask you who has practically done the actual work in connection with the production of the new wheats up to this time?—The research work—R. H. Biffen.

13873. Has not Mr. R. H. Biffen been teaching all that time at Cambridge as well?—He teaches 24 weeks in the year, I believe.

13874. He teaches a good deal more than that, I am afraid?—At any rate, my point on that is this—anything I could say to the credit of Cambridge I would say with enthusiasm, but I do want to make this point—that in the case of a University you have very short terms, and R. H. Biffen would never have been able to have done this work if he had not worked all through the vacations and on Sundays and at all conceivable times.

13875. I am not arguing in this particular case either for a man or a university. I only wanted to show that your point, that you could not associate teaching and research, in that particular case was not proved?—I did not say it was not possible to do it. I said it was unreasonable and unprofitable to expect men to teach and carry out research work at the same time, and, if Mr. R. H. Biffen had not been an extraordinary man and worker, he would never have been able to carry out what he did.

13876. If you put it that it is unprofitable and unreasonable to expect a man to teach and carry out research work at the same time, I am afraid that I cannot agree?—If you will state a case I will see if I can agree with you.

13877. Would you agree that a man who was carrying out research might be required to give instruction to advanced students?—Yes, such students as were going in for the higher ranks of agricultural education.

13878. Any student who had passed the entrance examinations and was going forward for a degree—you would agree he would be required to teach students of that description?—I would far rather take what R. H. Biffen and yourself have to say on that point than express my own opinion.

13879. (*By Mr. Medd.*) I suppose you look upon Rothamsted as your chief experimental station?—Are you asking me with regard to the work with which I am particularly connected?

13880. Wheat more particularly?—No, I cannot say that. It has been an extremely valuable one, and immense credit is due to Mr. A. D. Hall in particular for the work which he did in the early stages, but the work which is going to make the greatest mark has been done at Cambridge, although I am most anxious not to set the one against the other.

13881. At a collegiate centre such as the Welsh one you would expect research work of this kind to be done?—I am sorry to say I do not know much about the Welsh centre, but subject to that I should say, yes.

13882. For the general purposes of agriculture, including investigations into wheat, you would like to see the rest of England, which is now white on the map, covered with collegiate centres where experiments might be done?—That is not exactly my point of view. It seems to me that if you were going in for research work, it may be better rather to centralize than diffuse. You might easily by collaboration with institutions in various localities find out the application of scientific discoveries under various conditions—climatic, soil, and so on—and my main point would be that research had better be done at one centre, where you had the people actually in touch with each other doing the work.

13883. You would not have in Cornwall, for example, the same climatic conditions and descriptions of soil as you would have in Yorkshire?—That is true; and that is why I said a moment ago that if you have a central research station I would obviously wish it to collaborate with the other bodies already in existence, or to be formed in different parts of the kingdom; but I would prefer an

actual central point where the workers were in constant touch with each other.

13884. Viewed financially such an experimental station would be in a better position than if it were working in isolation, do you not think so?—I would rather not express any definite opinion on the point of procedure in the way you have just raised it; but I do not think the expense ought to be greater by one central institution, working in collaboration with others, if it is required.

13885. Would you prefer the funds for your association to come direct from the Board of Agriculture or through the various local authorities?—When you say the association you do not mean the one I am already connected with; you mean the proposed one?

13886. Yes.—I want to answer that rather fully. The amount of money which the Millers' Association have had at their disposal for the work they have done barely pays their out-of-pocket expenses. The whole work they have done has been done gratis by everybody, and that is the one point I would like to rub in. In the case of Lawes and Gilbert, they did all the work that they carried out out of their own private means; and in the case of this Home-Grown Wheat Committee, we simply get a small grant of £50 a year from the Board of Agriculture and £100 from our own Association, which just pays our out-of-pocket expenses; but the whole backbone of the work is being put into it for nothing so far as actual payment goes; and here is Mr. R. H. Biffen working as a lecturer on a small salary, I presume—I do not know—but doing this great work for the nation practically for nothing.

13887. (*By Professor Middleton.*) Is it not the case that Mr. R. H. Biffen has never had a penny from the fund to which you have been referring?—Yes; not a penny.

13888. (*By Mr. Medd.*) I understand your object in appearing before us to-day is to emphasise the national importance of your work, and that it is entitled in your opinion to State aid?—Not exactly that, because we are going to muddle through somehow, as Lord Rosebery says—and perhaps we will do something more than muddle through somehow—but I am taking it as typical of the way in which the work we are doing, and a very large amount of the research work of the country, is treated, especially if you are breaking new ground. I put it in this way; that if you will not give us funds we will do without them, but England should not place work of that description in that position.

13889. Your view as a witness is, that the various institutions which could carry out this work should receive State aid, and which institutions are affecting your trade, the trade of farming and the trade of milling?—Yes.

13890. That is the way you put it?—Yes.

13891. (*By Lord Barnard.*) You have put forward a theory which is rather contrary to the past history and experience of Englishmen, that they should rely exclusively on the State for any work of this kind being done, and that it has almost invariably been done by individuals?—That is not my view at all.

13892. Then it is advisable you should correct the impression you have given?—My point of view is this: the State should undoubtedly help, but I most certainly would make provision for the recognition of individuals, and the embodying of individual effort. If you can do this, by all means do so. I am quite enough of an Englishman to go to that extent. I do not ask that the State should do the whole thing, but I do say that the State could do more than it does.

13893. I believe with regard to the Lawes work a large sum of money has been given to further that?—Yes.

13894. Englishmen are frequently reproached for not doing enough, and it is often said that Americans are far more liberal in their benefactions and endowments for educational purposes than we are?—Yes.

13895. If your theory were carried out—you have rather corrected it now—it would be discouraging rather than encouraging private individuals to do more in the way of endowments?—I must confess, if you ask me on that specific point, I rather think the Americans go to the other extreme. What I suggest is this: if Englishmen would take up a middle attitude, where they would recognise individual effort, and recognise that it should go on as part of a national work, that would be better than either the existing American or the existing English system.

13896. I was rather referring to the question of public

endowments?—I am not competent to speak on the educational side.

13897. Public endowments have been applied largely to research in the past, and I do not understand that you would discourage private individuals from leaving endowments for educational purposes?—Certainly not, but it is quite wrong, in my view, to expect the work to be done as it has been done in the past by individual effort.

13898. You say to expect, I do not know who expects it; probably you do. I think you a little jump to your own conclusion, and also as I began by stating I think you have overlooked the fact that the State is considerably interested in the question, and that something will be done, and that we shall not be left to muddle through. Professor Middleton asked you as to whether research work and teaching could not be carried out together. I do not know whether you are engaged in teaching or in research work?—I am not. I am simply collaborating with people who are engaged in research work. I have never taught, and do not teach.

13899. You have expressed a very strong opinion upon a point which I suggest to you you are not really qualified to express an opinion upon; that is as to the desirability of research work being totally dissociated from teaching. That may be your opinion, but you base it entirely on your own opinion?—You will pardon me if I offend you, but you might not have heard what I said to Professor Middleton, in which that attitude was modified to a certain extent, that is to say, that I do not think it is any detriment to a man engaged in research

work to teach the advanced students such as you would get in the highest ranks of Cambridge University; but I do not see the use of a man engaged in the highest research work teaching elements of agriculture or going about the country lecturing to people who *prima facie* know next door to nothing of the science of agriculture.

(Professor Middleton.) I may say that Mr. Humphries has done a great deal of work in collaboration with Cambridge and Rothamsted, and that his opinions are entitled to great respect.

13900. (By Lord Barnard.) It is a matter for the researcher himself, is it not, to say whether he can best employ his time in limiting himself exclusively to research, or whether it is to his advantage to do some teaching at the same time?—I said a few moments ago that if Mr. R. H. Biffen and Professor Middleton, with whom I have collaborated considerably, are of that opinion, I would sooner take their opinion on that question than my own. But I do think, nevertheless, that if a man is engaged in research work that he has got enough to do, and that he should not be wasting his time in teaching elementary agriculture.

13901. You are assuming that he is wasting his time. We have had no witness here who has stated that he cannot devote his time to research work because he has to waste his time in teaching?—My illustration is that Mr. R. H. Biffen's time is so valuable to the country that it is a pity that any of such valuable time should be taken up in doing elementary work.

Mr. A. E.
Humphries.
—
4 July, 1907.
—

13899a

Rev. W. WILKS, M.A., called and examined.

13902. (By Lord Barnard.) You are Secretary to the Royal Horticultural Society?—Yes.

13903. You have held that position for some years?—Ever since 1887.

13904. Your Society has for a great many years done a good deal of work in encouraging scientific and technical education?—It has done all that it can, ever since the year 1822. I can begin at 1822.

13905. Perhaps it would save your time and ours if I say that we will be satisfied to take it that you have done some work in this direction for a great many years?—Yes.

13906. Perhaps you would come now down to more recent times and tell us the later steps?—Shall I begin at 1893?

13907. You might go back to 1866?—From 1866 to 1872 we instituted examinations for gardeners in conjunction with the Society of Arts. We established a committee to consider gardeners' education. That committee consisted amongst others of Sir Wentworth Dilke, Mr. Robert Fortune, Sir Joseph Paxton, Mr. James Veitch, Mr. Rivers and Mr. Paul; they went very carefully into the question of the examination of gardeners, and came to the conclusion that the only way it could then be done would be in conjunction with the Society of Arts, which held examinations all over the country. The Society of Arts cordially accepted our invitation to work with us, and we together examined gardeners all over the country at the Society of Arts' examinations, and we gave prizes.

13908. That only lasted for a few years?—That only lasted for a few years—from 1866 to 1872.

13909. Why was it dropped?—I cannot tell you that.

13910. Nothing was done by the Society for a good many years after that, I think?—Nothing, so far as I know, was done between 1872 and 1892.

13911. What did you do in 1893?—In 1893 we started a general examination in the principles and practice of horticulture for gardeners all over the country.

13912. What induced you to start that?—My own feeling that such a thing was desirable.

13913. Has that examination gone on down to the present day?—It has gone on down to the present day.

13914. And still continues?—It still continues.

13915. Are you only an examining body, or do you give instruction?—We are only an examining body as regards this general examination throughout the country.

We give instruction at our gardens, but that is entirely a separate subject.

13916. Do you grant a certificate or diploma?—We grant a certificate to every one that passes the examination.

13917. Do you find many candidates come up for examination?—Yes, a great many.

13918. What is the result; are the candidates that pass your examination able to earn higher emoluments?—Decidedly; I can give you some of the figures; the number who go in for these examinations varied from 236 in 1900 to the lowest number we have ever had—150 this year.

13919. What class of men go in for these examinations?—Gentlemen's gardeners and foremen, and improvers, and such like.

13920. A man must have a certain amount of scientific knowledge, must he not?—Yes, he must have some amount of scientific knowledge, because he must pass the examination both in practical and elementary science.

13921. Do any elementary schoolmasters from rural districts come to you for instructions?—That is another branch that we established in 1904: an examination for teachers and pupil teachers connected with elementary and technical schools.

13922. Has that been successful?—That has been very successful; in the four years that it has been going, 601 teachers have entered for the examination.

13923. Then you have a third examination?—We have a third examination which was established only last year—we have only held it in 1906 and 1907 at the instance of the London County Council—for men employed in public parks and gardens throughout the country.

13924. Do you charge a fee to candidates?—We do: it is 5s., but it does not anything like cover the expenditure; it simply is, if I may say so, to ensure that the man going in for the examination *bona fide* wishes it; that he does not do it simply for a joke or out of mere curiosity.

13925. At what age do they generally come up?—That I cannot tell you.

13926. Can you tell me at all whether they are fairly well educated. Is the spelling and that sort of thing good?—They vary enormously.

13927. Do you think since this system was instituted in 1893 that there is a general improvement in the

Rev. W.
Wilks, M.A.
—

Rev. W.
Wilks, M.A.
—
4 July, 1907.
—

educational qualifications of the candidates?—A most distinct improvement is reported by the examiners.

13928. You wish to put before the Committee some of the difficulties with regard to the education and examination of gardeners?—The difficulty, of course, of an examination for a gardener lies in the enormous scope which a gardener's education must necessarily cover. It is not the same as with agriculture, where you have to deal with perhaps a dozen different plants and half a dozen different animals. In the case of a gardener you have 1,000 different plants to deal with—collected from all parts of the world, from the poles to the equator—and they all require different treatment, different soil, different temperature, different moisture, and things of that description, and it cannot be treated in a mechanical manner at all. No hard and fast rules or laws can be laid down. Then as regards the difficulty of the class from which gardeners come, it is evident at once that they come principally from boys leaving the elementary schools at the age of 13; their parents cannot possibly afford to keep them without the earning of wages, and the earning of wages is very detrimental indeed to any subsequent education being imparted to them, except that of what we may practically call a rule-of-thumb method.

13929. Then, as to the inherent defects in the examination?—The defects in all our examinations are also very evident—they lie on the surface. We cannot possibly examine practically. We cannot take the men to a garden and say, "Now dig that piece," or to a fruit tree and say, "Prune that tree," because the gardeners come from all over the country—from north of Scotland, to the South of Cornwall—and they could not possibly afford to be all brought together at one centre to be examined together at one time, nor could we afford to send skilled examiners into every district in the country.

13930. Have you any suggestions for improvements in this respect; do you think anything could be done?—With regard to the last point?

13931. Yes.—No, I do not think myself that anything can be done. I believe it to be inherent.

13932. You think your Society is doing good work at any rate in levelling-up and improving the scientific attainments of practical gardeners?—I am quite sure we are.

13933. Will you tell us something of your students and of the people you teach?—We began on a new system in 1894, and we teach them in our gardens all the practical methods of horticulture, but up to the present time we have not been able to teach them what you would understand as science; we have not been able to teach them such things as chemistry, physiology of plants, or such points. We have simply taught them the best methods of gardening from a practical point of view, and those men have almost invariably turned out well. Do you care for me to tell you what they have done?

13934. At what age do they come?—We limit the age from 17 to 20.

13935. They are quite young men?—They are quite young men, and we keep them for two years.

13936. Do they go through the examination at the end of the two years?—Not necessarily, but as a general rule they do; it is voluntary on their part.

13937. Do not give us too many instances, but generally speaking, what becomes of these young men?—One is a curator in the West Indies at the Botanic Gardens; another is head-gardener to Baron Rothschild in France; another tea-growing in India; another is assistant at the Kew Arboretum; another is assistant at the Imperial Institute; another the Editor of the "Madras Observer"; another is on the staff of Reading College; another is on the staff at Kew; another is on the staff at Wye College; another is horticultural instructor under the Government of Denmark; another is at Dublin University, teaching; another is at a botanical station in West Africa; another is at the University at California, and so they go on.

13938. Are many employed in England in actual gardening?—Not very many of these students become actual gardeners, because they rise above it.

13939. Do you give any scholarships?—In conjunction with the Worshipful Company of Gardeners, we always keep one scholarship going—for two years, you understand. Each year the man who passes our general examination first has the option of a scholarship of £25 a year for two years' study at our gardens at Wisley. He holds it for two years. Each year the head man has the offer of

it, and if he does not accept it for any reason, the second man has the offer, and so on through the first class.

13940. Do you do any research work?—We have not done any distinct research work up to the present, but we are at the present moment inaugurating on the 19th of this month a research station at Wisley which has been properly fitted up with all scientific apparatus for the purpose.

13941. Will that be done entirely at the expense of the Society?—Entirely.

13942. The Society is very flourishing at present, is it not?—I am happy to say it is; we have an income of nearly £20,000 a year; but may I say this, I do not see that that is any reason whatever why the State should not help.

13943. You were in the room when the last witness gave his evidence?—Yes.

13944. Do you agree with the view he expressed that research work is very necessary?—I agree that research work is intensely necessary.

13945. And that it is a national work and that the State ought to bear some of the cost of it?—Decidedly.

13946. To take the case of gardening, more especially in connection with, on the one hand, the wages of the men employed in the industry, and, on the other hand, the interest of the consumers of vegetables, you think that is desirable?—Certainly.

13947. From both of those points of view it is desirable that the State should give assistance?—Yes.

13948. I think I am right in saying you are a clergyman in a country parish?—I am.

13949. A rural district probably. I should like to ask your opinion on gardens in elementary schools and teaching nature study. Have you paid any attention to that point?—It has come before me not as being a country clergyman, because we have no facilities in my immediate neighbourhood for school gardens; but it has come before me, as Secretary of the Society, and I cannot help thinking that a very great deal of good has been done by school gardens. There is one schoolmaster, as an example, somewhere in the neighbourhood of Plymouth. I forget the exact spot now, but perhaps Dr. Somerville knows, who has done immense work for gardening in that way, in encouraging the boys' tastes in that direction, and guiding them on the first principles of what they should do and what they should not do.

13950. Do you think that is a good form of education for men who are going to be gardeners in future life?—I think it is decidedly better than the principle of nothing, which most of us pursue. I say my own schools cannot—of course, they have ceased to be our own schools—but in the schools with which I am connected, and which I built and so forth, we have no facilities for a school garden, otherwise I should have set one up long ago.

13951. Then you recognise that it is not always practicable even in country places to have school gardens?—Oh dear, no; it is not always possible.

13952. Are there any other points you would like to bring to the notice of the Committee?—Before we pass away, you mentioned nature study. I am afraid I am rather a heretic on the question of nature study, because I cannot help thinking and saying that many of our British plants have been destroyed almost by this intense search after specimens. I am a great searcher myself, but I never touch a plant unless there is an abundance of it, and I never take more than one or two at the outside; but you cannot expect boys and girls at school to discriminate very largely, and whenever they see a rare plant they grub it up at once, and, by the way they take them up, they can never be expected to live. The same with butterflies, and I may tell you that I am now engaged in going about the country on my bicycle all over the place collecting caterpillars and bringing them back and putting them in a secluded place. I am not absolutely in the country. I am in the neighbourhood of a large town, and you can see troops and troops of young people coming out on the Wednesdays and the Saturdays, and they strip everything. There is not a fern or primrose to be found in my whole neighbourhood, and there is not a butterfly either to be found, except those I bring back with me.

13953. Are there any other points you wish to bring to the notice of the Committee in connection with scientific and technical instruction, and the facilities now afforded for that?—You will remember that my sphere is entirely

Rev. W.
Wilks, M.A.
—
4 July, 1907.
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gardening. I know nothing about agriculture except what I observe with my eyes.

13954. The functions of agriculture include gardening?—Quite so. There is only one thing I think that practically could be done to encourage and improve these lads leaving school and going into gardening, and that is, if during the last year of their stay at school the boys could be asked particularly what line of life they were going to follow, and that then part of their time should be devoted to a proper text book on the subject to which they intend to devote their energies after they leave school, it would be an excellent thing. If a boy, for instance, when he is 12 were to say, "I want to be a gardener," and he had text books put into his hands, and made to employ part of his time in the study of them, he would be able to ground himself a good deal in the theory, and would pick up his work ten times more quickly when he goes to it than if he were to go to it as he does at present—absolutely ignorant of any details whatever.

13955. (*By Dr. Somerville*). With regard to this question of the destruction of flowers, have you ever thought of moving the County Council to make regulations on the subject?—No, I have not. I am afraid I am not a great believer in the wisdom of County Councillors in such matters. The County Council in my district have only exercised their powers in that direction in one matter, and that was by issuing a regulation that no lark was ever to be destroyed; the country swarms with larks.

13956. Do you know that the County of Devon have made regulations with regard to the grubbing up of flowers and plants?—Yes, I am aware of that.

13957. You have no reason to believe that that regulation is not effective?—I have every reason to believe that those regulations are not effective. Our Council at Croydon are the owners of a very large open space of ground covered with heather, and they have huge boards up, that anybody damaging the heather or taking it away will be prosecuted. Any day in the week when the heather is out you will see hundreds of people walking along the roads with bunches of heather in their hands walking down into Croydon and passing policemen and no notice whatever is taken, and I have every reason to believe that it is the same in Devon.

13958. (*By Mr. Latham*). If your young men when they leave you have no examination or diploma or degree, what are their qualifications as they pass on into life?—Every student that goes in for our final examination, and passes, has a diploma, but if he does not choose to go in for the examination it is his own fault.

13959. He has then no qualification at all, and it is no use his saying he has been with you if he has no qualification at all?—He has always the reference back.

13960. Would that be of much assistance to him?—It would depend entirely on what his character and diligence had been whilst he was with us.

13961. Is there any great exertion made to try and

get them to try and take a diploma?—Yes, and they almost invariably do take the diploma. The difficulty about their going in for the examination at the end is this, that their term may not end at the same time as the examination takes place, it may be that it is nine months beforehand and they may have gone right away by that time when the examination is held.

13962. I presume they could come up for examination then if they liked?—Oh! yes, they could.

13963. Do you not think it would be very desirable if they did?—Most desirable; and if they are in this country as a rule they do.

13964. (*By Mr. Medd*). You say great damage is done by lads from the town near which you live?—Yes.

13965. What age are those lads as a rule?—Every age from 8 to 18.

13966. Do you think any of them have been to a school in which nature study is taught?—I could not tell you at all.

13967. May I ask what the town is?—Croydon.

13968. I know nothing of it in Croydon, but the probability is that the children in those schools have never been yet taught to appreciate either insect or animal life, and that the very reverse of your experience would occur if those children had had that advantage?—I should be only too delighted if it were so.

13969. I would only ask you this point: do not you feel inclined to try and get your local authority or your schoolmasters to attempt the instruction?—In nature study?

13970. In nature study?—Well, that should be for the local authority to do.

13971. That is so; but as a matter of fact I think you would find no local authority to-day would oppose it, except possibly on the ground that they had no adequate teacher, and such a teacher they might obtain if only as a peripatetic. The matter is one that solves itself. It is most curious, I may tell you, that the best place for the study of nature is the centre of London. You will hardly believe it?—I can think it quite possible. It would not be unlikely that the boys who would observe the great buildings of London would be country boys who have never seen such before—and so London boys might be expected to observe Nature, having never seen anything of the sort before.

13972. It is so. The work done by the pupil, the concentration of effort and the general results are better in Whitechapel, in the east-end of London, than they are in the country?—It is quite possible.

13973. You are Secretary to the Society as a whole are you not?—Yes.

13974. The work of the Education Committee of your Society is expanding I think?—Yes. That is what it will be from the 19th of this month, on which day we open our new Laboratory and Research Station at Wisley. (*Handing document*.)

MR. J. A. VOELCKER, M.A., B.Sc., PH.D., called and examined.

13975. (*By Lord Barnard*). Would you be good enough to tell the Committee the exact capacity in which you attend here?—I am chemist of the Royal Agricultural Society of England and the Bath and West of England Society, the Lincolnshire Agricultural Society and others, and as regards education I am also examiner for the National Diploma of Agriculture and the National Diploma of Dairying; I also examine at Cirencester, and occasionally at Edinburgh and other places; I am also chemist to the Royal Horticultural Society of which Mr. Wilks, who gave evidence just now, is the secretary.

13976. You have considerable acquaintance with the farming community?—I have.

13977. You know their views and feelings and wishes to a great extent?—Yes.

13978. You know the terms of reference to this Committee—I daresay you have read them?—I have.

13979. Would you oblige the Committee by telling

them what your views are of the facilities which now exist for affording scientific and technical instruction in agriculture?—With reference to the colleges, and so forth?

13980. Yes.—If I was speaking generally I should say that the present was a time of progress and of satisfactory progress; I think also, speaking quite generally, that as far as my particular subject, chemistry, goes, it is very well provided for at existing institutions, to the extent that the ordinary agriculturist needs it to be taken, and I look for further development as the need comes, but I do not consider that, so far, there has been anything superfluous done, nor do I consider that the subject has been badly provided for. I think that it is capable of development, and that that development will be a natural one, but, so far, I think that through the impetus which has been given to agricultural education generally throughout the country, and through the checks by examination, and otherwise, that are placed upon its progress, good and efficient work is being done, and I look

Dr. J. A.
Voelcker.
—

Dr. J. A.
Voelcker.

4 July, 1907.

for an extension of that. At the same time, there are some directions in which I think a more decided line of progress might be taken, and there are also some lines on which I think a check should be placed—certain dangers that want guarding against.

13981. Are you prepared to indicate what those dangers are?—I am prepared to indicate the one that I am perhaps more particularly able to speak of, and that is, I consider that at our colleges there is a great mistake being made by the extension of the system of making the heads of departments and the students studying under them analysts instead of instructors.

13982. I am afraid I do not quite understand?—The danger that I fear is that our colleges are going far too far in turning out analyses for farmers instead of devoting themselves to instruction and research.

13983. I suppose we may take it from you that an elementary knowledge of chemistry is invaluable to a man who is going to work his own farm?—An understanding of it is a necessity.

13984. It enables him, for instance, to understand an analysis or any other report that may be sent to him by a scientific man like yourself?—He should have sufficient training in general chemistry, and chemistry applied to agriculture especially, to be able to grasp the points contained in analyses of the subjects relating thereto.

13985. You would very much deprecate any attempt to make him a scientific chemist rather than a farmer?—I think that that is going beyond what is contemplated by agricultural education.

13986. At the same time, I suppose in the case of some of these colleges you would not deny that it is desirable that they should in some individual instances extend the teaching very considerably in consequence of the necessity of their having to train teachers as distinct from farmers?—I approve of it thoroughly so far as the training of teachers goes, and of the training of their students to give them a knowledge of what is involved in analyses and the understanding of analyses. What I deprecate is the making use of public money, given for educational purposes, for what I may call this commercial work—work which is amply provided for elsewhere, and the attention given to which means the taking away of that time which ought to be given to education in the right sense of the word, and to research work.

13987. Where are members of your own profession (chemists) trained, may I ask?—There is very strong feeling, and there have been many representations to the Board of Agriculture by our professional bodies, on this very point, of the training of chemists. They have attended as deputations to urge their views on it. I have the particulars before me now. The Institute of Chemistry in particular has made strong representations, and successive presidents have dealt with it, Sir William Ramsay and others having expressed themselves very strongly on the point to which I have referred as affecting the progress of professional chemistry as a whole throughout the country. They have pointed out that such work as is in many cases done by colleges, ostensibly for the benefit of the farmers, is not a matter in the nature of agricultural education at all, and ought not to be provided for out of money given distinctly for the purpose of education. They have further pointed out that the work is already admirably done by different agricultural societies who employ qualified men for that work, and that, if the practice to which they object is continued in, it must be bound to have a bad influence upon the advance of professional chemistry as a whole, inasmuch as the work done at colleges is not under any control at all, and that no qualification is needed from the man, no certificate of competency, and so forth, so that the general tendency is to depreciate the whole subject of agricultural chemistry in the public view, and to act detrimentally with regard to the position of men already holding public positions, and also to discrediting and discouraging individual work.

13988. Am I right in gathering that your remarks deprecate any analytical work being done by professors in colleges?—That is so.

13989. I should like to know, if I might, where members of your profession get their training generally?—Members of our profession get their training at the recognised institutions in the country—at our universities and colleges; the Institute of Chemistry insists upon a five years' course, three of which must be a distinctly collegiate or university course, and that has to

be followed by two years of practical work with some Fellow of the Institute where they will get their special training; then it also certifies their competency by means of examination.

13990. I do not think, if I may say so, that we have had evidence to the effect that either teachers or students undertake work which could be more profitably done by chemists like yourself. In fact, so far as I can recollect, your information is a revelation to me. I had no idea that students or teachers did do such work?—I can assure your lordship that it is a very common thing, and this matter is constantly engaging the attention of the Institute of Chemistry.

13991. Unless, of course, they were qualified chemists like yourself. I did not mean to say that I did not think that teachers ever did it, but my impression was that only those teachers did it who were properly qualified?—What we as professional chemists object to is, the time of agricultural chemists at colleges being taken up by doing work, in many cases, for outside people altogether, through the facilities given by grants from the Board of Agriculture, and of these I have a number of instances that I can give.

13992. Do you think that anything further should be done by the State or by local authorities for agricultural instruction?—Agricultural instruction generally?

13993. Yes. Including, of course, such a measure of chemistry as you have just referred to as necessary?—I cannot suggest any wide departure, but I would advocate a pursuance of the present lines with extension more in the direction of research. I think that there might well be given more encouragement and facilities for the pursuit of research at our colleges, and that would interfere with nobody.

13994. Are there any other points you wish to mention?—If I may be allowed, I should like to make a reference to the examination for the National Diploma of Agriculture.

13995. As you are one of the examiners, perhaps that is only reasonable?—If I were asked my opinion generally, I should say of course that this is an examination which is capable of improvement, like everything else, but that it is an excellent examination as it stands. All sorts of remarks have been made depreciative of it, and as I have been connected with it from the very beginning, I should like, preferably by way of answer to questions put to me, to state what I think of the different objections that have been put forward to it. If I may single out any particular attack upon that examination, I would like to take the remarks of Mr. Hall in a Paper read by him recently at the Farmers' Club.

13996. Do you think that the examination is a sufficient test of the scientific and technical attainments of the students?—By itself not.

13997. You think it is not?—I think that it is an excellent general test, but I do not hold that any examination by itself alone is an indication of a man's abilities. I hold that as an examination *qua* examination it is the best of its kind that you can have, but personally I am not in favour of the examination system as an all-prevailing one—as ruling everything. With that limitation I consider it an excellent one, and the best thing of its kind at the present time.

13998. Do you think the results of class work should be combined with it?—I think that is already done. I think the Board of Agriculture, by helping the colleges, provides for that work, and that the examination as an outside and independent test coming on the top of it does provide what is required, but I would not have the National Diploma of Agriculture stand purely by itself as indicating that a man who can pass that must thereby necessarily be a good agriculturist. I hold that the two things should go together. On the one hand I should not be satisfied with the college examination alone, nor on the other hand should I be satisfied with the independent examination alone. I think that the concurrence of the two things is a very wise arrangement, and provides a very satisfactory test. There is no question that attacks have been made on this examination; they have been made in public, and I would like an opportunity of answering them.

13999. (*By Lord Moreton.*) Would it meet with your approval if in the future it was found possible to make the examination you have been referring to of a more directly practical nature, perhaps not so much as regards your own subject but as regards agriculture, and, say,

Dr. J. A.
Voelcker.

4 July, 1907.

botany and entomology. In other words, would you approve of the idea of a pupil being taken out on the college or other farm for a walk with the examiner, and put through his paces out of doors with regard to practical questions in a practical manner, by a practical man on a practical farm, and on any other kindred science that may be applicable?—I do not think this is called for in an examination such as that for the National Diploma of Agriculture.

14000. I did not ask you whether you thought it was called for, if I may say so. I asked you whether you thought it would be an improvement?—I do not think that it would be an improvement. I think that work should be provided for at the colleges.

14001. (*By Professor Middleton.*) For what purpose does the National Diploma examination exist?—I consider it exists as a test of the teaching at the colleges, and of the efficiency of the students there.

14002. Do you consider that the test is required?—Yes, I do think it is required, inasmuch as I do not consider that a college by itself, constituted in a particular part of the country where a particular class of agriculture is pursued, is a fair general all-round test, and I am always in favour of an independent examination rather than of one by a man's own teachers.

14003. You are in favour of an outside examination?—I am in favour of an outside examination.

14004. As compared with an examination by an institution responsible for the teaching?—Yes.

14005. Of course, that raises a very wide question which is constantly being debated in educational circles?—Quite so, and it is in that capacity that myself and others act for different colleges—Cirencester, for instance.

14006. I understood you to make two complaints against the colleges. One was the complaint that the colleges spent too much time in teaching practical chemistry instead of agriculture—i.e., that instead of training agriculturists they were training agricultural chemists?—Yes, I think that is an objection.

14007. Would you not agree that it is necessary you should train experts as chemists and agricultural botanists?—I do not think it is a thing on which public money or money given for educational purposes ought to be expended, and for this reason: that while you are doing it you are altogether killing the institutions which are not so helped, and you are also putting an unjustifiable bar in the way of outside professional men; in other words, you are cutting the ground from under their feet.

14008. So that you would have the higher education of the agricultural chemist and of the agricultural botanist entirely carried out at private institutions?—Yes, and for this reason: that for a man to become a properly qualified scientific chemist he needs to go through general chemistry in a very much closer and more minute way than if he is only using it for the purpose of getting some acquaintance with agricultural chemistry. In other words, an agricultural college, avowedly, is not a place where a man can get the requisite training in agricultural chemistry which is ever to make him subsequently a properly trained man, scientifically.

14009. I am afraid, if your argument were carried to a conclusion, it would abolish universities as training grounds for agricultural chemists and botanists?—No. I say that an agricultural college is not in a position to give the scientific training which will qualify a man for being a practical chemist afterwards.

14010. (*By Lord Barnard.*) You have twice used the word agricultural college. You see all those that we call collegiate centres marked on that map. There are many of those, Leeds, Newcastle Cambridge, Bangor, and the rest of them, which are not exclusively agricultural colleges. Do you apply the term agricultural college to these places?—I am afraid I used it rather too loosely; I am excluding those of University rank.

14011. (*By Professor Middleton.*) That relieves my mind to some extent?—I mean to say, if I may give an instance, a place like Wye College, which is an agricultural college, is, in my view, a totally different thing to such a place as Leeds University or Cambridge University, where a man can pursue his distinctly scientific training, independently of what he is going to do afterwards, whereas at Wye he only gets enough science to enable him to dabble in analysis afterwards.

14012. You agree that a university college is the right place to train scientific experts?—Certainly I do.

14013. You hold strongly that a college should not undertake chemical work?—Strongly.

14014. That is to say that a chemist attached to a college should not take such work as is undertaken by the County Analyst under the Fertilisers and Feeding-stuffs Act?—I do.

14015. Personally I agree with you, but I am bound to say we have had instances before us where we found that the colleges were able to take up this type of work with great benefit to the agricultural community; the argument which was used by the college was, that by doing this class of work they brought themselves into closer relation with the farmer than they could possibly have done if this particular type of work had been neglected. Do you agree that there is something to be said from the point of view of the College?—I say there is nothing whatever to be said in defence of their taking up work which is not work of agricultural education. In other words, I do not hold that it is agricultural education; it is doing for the farmer what he can get without educating himself, and I think we are going out of the province for which we have received public money, and in the meantime I think it is destroying the pursuit of agricultural chemistry as a practical science.

14016. Not the pursuit of agricultural chemistry. I should say rather the business of analytical chemistry?—It is destroying it, and it is destroying the coming forward of any man to work outside any of these institutions; it is destroying it as a profession, practically. The ground, in other words, is cut away from under the feet of competent men who are engaged in agricultural work and outside people who pursue agricultural chemistry as a profession. The ground is cut from under their feet by the system of low fees practised by agricultural colleges. I have cases before me now which would illustrate what I mean, if it were wished.

14017. I agree to a very large extent with the point of view you take up, but with some of your remarks I cannot agree. Is it possible that this work is being done by men who are incompetent and who are not properly trained?—It is perfectly well-known that there are at Colleges perfectly competent men; but it is also thoroughly well-known that these men cannot do the analyses themselves, and that they have to leave it to be done by their students.

14018. I am surprised to hear that?—And if a man who is a director of a department has to do the analyses himself for these miserably small fees, I say it is a waste of his time and of his talents to do such work and to take it away from other men who have to live by their knowledge; in many cases it is done by students who have a certain scientific knowledge, but who were never intended to have the special knowledge necessary to carry out such work. I do not say in all cases the work is done by students, because very often the director of a department employs a man to do it who, though by no means necessarily, is a Fellow of the Institute of Chemistry.

14019. (*By Lord Barnard.*) Without pursuing the subject any further, I think I clearly understand you to say, no doubt speaking for other members of your profession?—Yes.

14020. That you have the strongest objection to colleges which are provided for agricultural instruction being indirectly used for doing the work which you consider your profession ought to do?—You have exactly expressed it, my lord.

14021. (*By Mr. Latham.*) With regard to these remarks that come, I suppose, absolutely from your professional life, may we take it that a large amount of the analyses that are done in these agricultural colleges would barely stand if a certificate had to be given?—No. They do not command the respect and confidence of the trade even. I mean to say when any question arises they cannot be used and they do not command confidence.

14022. (*By Professor Middleton.*) When any legal question arises?—Yes, when any legal question arises; and I have had, over and over again, in my experience, instances of discrepancies between their analyses and my own and others.

14023. (*By Mr. Latham.*) I suppose we may take it for granted there are always those discrepancies between two analyses?—Unfortunately there are.

14024. Are they not far enough advanced to give certain evidence of what is going on in the agricultural

Dr. J. A.
Voelcker.

4 July, 1907.

world?—I felt it necessary, if I had the opportunity, to give expression to these views because undoubtedly encouragement is given by the Board of Agriculture to the fixing of appointments under public Acts such as the Fertilisers and Feeding Stuffs Act in agricultural colleges, and the Institute of Chemistry wishes distinctly to protest against it. In many cases already the appointments are held by men who are teachers in agricultural colleges and who are at the same time agricultural analysts under the Fertilisers and Feeding Stuffs Act.

14025. (*By Professor Middleton.*) May I point out, as a matter of fact, that the local authorities appoint these analysts?—Yes, but they cannot appoint them without the approval of the Board of Agriculture.

14026. The Board of Agriculture cannot object so long as the analyst is a properly qualified man and approved of by the local authority?—My point is this: that at the head of the Department may be put a man who is a qualified chemist, and if that man is free to take outside work he has also to do these analyses for the farmers, and his time, in my opinion, is wrongly used in doing analyses at ridiculously low fees aided by public money given for educational purposes. If he does not do them himself, there is no control whatever as to the competency of the man whom he employs to do it for him. In other words, he gets somebody else to do it—it may be his assistant—and the Institute of Chemistry has no control over those men, and there is no test whatever of their competency.

14027. (*By Lord Barnard.*) He puts his name to it?—He puts his name to it—I have some of them here before me.

14028. (*By Professor Middleton.*) Does not every analyst employ assistants, and must not he make himself responsible for the work of his assistants?—Yes. He makes himself responsible for it just in the same way that I do for the members of the Royal Agricultural Society; but everything goes through my own hands. The point I make is this, that you are receiving money for agricultural education purposes, and I do not consider that making analyses for farmers is education at all. This point has been introduced by me, if I may put it so, on the ground that this is not what is intended by agricultural education.

14029. That is quite apart from the competence of the men who undertake the work?—Yes, but I think it is within the scope of the Committee.

14030. (*By Lord Barnard.*) We have discussed on many occasions the meaning of the term education, and we have come to the conclusion that we must not accept it in the sense of teaching little boys or little girls by way of training their minds, but that it is distinctly technical and scientific, and I think the line we shall take probably will be, as long as these analyses which you have mentioned are used for the purpose of obtaining information and instructing the farming classes, that they are justifiable, but I do not think it is done, or at any rate not largely done, for purely commercial purposes?—Not for purely commercial purposes.

14031. (*By Mr. Latham.*) Do you wish us to understand that there are different grades of analysts?—Yes, certainly.

14032. That some men are not as competent to give a full analysis as others?—In analyses there are two sides, as it were. There is the purely mechanical side, and there is the other side, the interpretation of the results. The purely mechanical side can be done by a man without any scientific training—a man that one generally calls an assistant. An assistant may have simply practised in that branch and he may make as competent or a more competent analyst than many men who stand high in the profession, but that is the mechanical side, but when you go on to speak of the interpretation of an analysis, and what it means, then I say that nobody ought to undertake that part unless

he has had from the beginning a distinctly scientific training, and the subsequent application of that training to agriculture in particular.

14033. You hold the opinion that, unless a man belonged to your body, it would be very difficult for him to carry out this work?—I cannot go so far as that, but I do say it is the endeavour of our body to make sure that the training of all men who shall figure as professional chemists subsequently, and fill public appointments, shall be according to the curriculum that we have laid down, which implies practically three years at a university or a collegiate institution, followed by a certain number of years practical acquaintance with a man engaged in that particular subject.

14034. How are public bodies such as county councils to find out that these chemists who are described in this book, and who are, as I should have thought, properly educated men, are not analysts according to the views that you hold yourself?—We are constantly trying to press upon public bodies, such as the Board of Agriculture and the Local Government Board, the importance of only sanctioning the appointments being given to men belonging to our institute.

14035. I thought possibly that would be your answer: that you would throw it on the Board of Agriculture that they should not accept these men unless they were members of your body?—No.

14036. But they do?—Now it is getting understood, and it would be only fair of me to say that both those bodies are more and more recognising the need of it.

14037. There is no fear of a county council appointing such a person as you described as—you will not say fully-equipped, but one who does not belong to your profession—to take up the line that you yourself follow?—There is not the danger now that there was previously; but what I would like to point out is the difficulty of the position in which many of our fully-qualified men find themselves, whether they like it or not. It is that, being qualified men, they have such an appointment given them when engaged at a college, and when they are once there they have to do what they are told, so that they have to do cheap analyses for farmers, and they may have to do chemical work for people outside or run the risk of losing their appointment. They have to do it. It is not competent for a man to say, "I will not do it," unless he can influence his council to prevent him taking such work. Many of our qualified men, as, e.g., in Newcastle, do not wish to do it, and are thoroughly with us on that point; but they are not in a position to quarrel with their bread and butter; they have to do it because their county councils oblige them to.

14038. May I put it in another way. Independently of the Fertilisers and Feeding-stuffs Act, is there any very serious objection to their taking up the analysis of certain farmers' goods which are not likely to go further than just to assist the farmers?—I think so. I consider that work was very well done by agricultural societies all through the country, and these agricultural societies made a point of having attached to them thoroughly qualified men who thereby made a living by it, but now the ground is cut from under their feet. They cannot compete with the agricultural colleges charging half-a-crown for a soil analysis. Those are the points we complain of at the present time. Some agricultural colleges are doing complete analyses of soil at 2s. 6d. that I myself charge five guineas for.

14039. You are a trade unionist?—It is absolutely necessary if you are going to have any extension in the direction of agricultural chemical work and research work that you should give a man a fair living for his work, and that in the case of our men in colleges you should not hamper their work by making them give up their time to doing half-crown analyses. How can a man do his work of agricultural education, teaching his students all the time, if, whenever a farmer sends him in a complete analysis of soil, he has to do it for 2s. 6d.? How is that going to be done; and is that agricultural education? I say, no.

MR. GEORGE HOGBEN, M.A., called and examined.

14040. (*By Lord Barnard.*) You are Inspector-General of Schools in New Zealand?—Yes, that is the legal title of the head of the Education Department.

14041. Your Department covers both primary and secondary schools?—The Education Department of New Zealand takes cognisance of every grade of education; it differs from those of the Australian States in that respect.

14042. Does the State undertake any duties in connection with the instruction of agriculturists?—Nearly everything that the State does is done through local bodies of one kind or another; the control is not direct as in Australia.

14043. Do those local bodies undertake any special duties in connection with agricultural education?—Yes, the State encourages agricultural education from the elementary school up to the University, in fact further than the ordinary degree, up to the research stage, by grants which are given or offered under certain conditions.

14044. Those grants are given specially for agricultural work?—Yes, some are, and of course there are others that are not given specially for agricultural work, but which can be used just as much for agriculture as for other branches of applied science.

14045. Elementary schools I see you call primary schools?—I call them primary schools for convenience, because the words "secondary schools" are used. The divisions of schools in New Zealand are not exactly the same, necessarily, as they are in England. The primary school education goes one class further than the compulsory stage. That is what we call primary education. University education, I think, is pretty generally understood as being parallel to that in England, and anything of an intermediate character we are gradually getting into the way of calling secondary education. A part of the technical education is secondary, and a part of it is of higher rank, that is to say, of University rank.

14046. What is the Department that controls education?—The Department of Education.

14047. Have you a Department of Agriculture?—Yes, but that deals more indirectly with educational matters. The Department of Education acts in concert with them, but agricultural education is not under their control.

14048. Your department consult them, do you?—Yes, we consult them, and they give us certain facilities; they also conduct the experimental farms; the experimental stations are under the Department of Agriculture.

14049. I suppose you will agree from your own experience, after what you have just said, that this kind of work, obtaining information, and diffusing instruction and knowledge to agriculturists, is rather on the border line between the two departments—the Department of Education and the Department of Agriculture?—I think so, but I think when it is dealing with the diffusion of literature among farmers it is better carried out by the Agricultural Department as we have it, but when it is distinctly dealing with technical institutions it is better done by our Department, as we want to keep a co-ordinated system. We are extremely anxious to do that in New Zealand, and we have succeeded in getting a degree of co-ordination that we have never had before. We do not want to cut off agricultural education from the system that is adopted with regard to other education; the elementary schools cannot be handed over to the Agricultural Department, and the secondary schools cannot be handed over to them, nor the University. We deal with all those.

14050. The practical, or demonstration, part of the work is done by the Agricultural Department?—Yes, except the work that is done in the Agricultural College.

14051. In your primary schools there is a certain amount of teaching given in agricultural subjects?—Yes, that is of two kinds. First of all, what is not specifically agriculture at all comes under the head of nature study. We are very strong believers in nature study in New Zealand, and we do not find any disadvantages from it. We do not believe in it as an isolated study. We believe that it should go through all the work in the elementary school—right through the work. I mean to say we require from certain schools definite courses of nature study. Every school with more than one teacher must have a definite course of nature study; but every school without

exception must take nature-study, even the schools that have only one teacher, and it must be held in view in all the lessons. The principal objects of that nature study are to train the children in observing the things around them. That is the most valuable preliminary training, in our opinion, either for agriculture or for anything else.

14052. That training is not specially limited to agriculture?—No, but without it higher agricultural education would have to begin by teaching things that the pupils ought to have learnt ten years before.

14053. Do you have any school gardens in connection with your schools?—Yes, I was going on to say there was the general course of nature study for which our primary school syllabus gives suggestions. Then there is a suggested course of elementary science for town schools, and another for country schools, although it is not limited to country schools; it might be called an extended course of nature study bearing very closely on agriculture. We give that to every one, whether they are going to be farmers or not. We are not so much afraid as they are in some countries of specialisation, as we think you can get just as much scientific training by taking subjects that come under the head of agriculture in the elementary stage as you can by taking the subjects that come under any other head. It is the method which should be scientific, not so much the subject matter. That is our point of view, and we say we can give the boys and the girls—because we treat them all alike in that respect—a general elementary training in a scientific method by taking the subjects that are called agricultural as by the subjects that are allied to any other branch of life. Observation of that policy where it has been worked leads inspectors all over the country to say that it is capable of giving to country children a general training in elementary scientific method that you could not get in other ways.

14054. Is the bulk of the population of New Zealand agricultural?—Yes, more than half is agricultural. The proportion of male workers is about four to three; that is, four out of seven, or perhaps not so many. Perhaps eight out of 15 would be employed in agriculture directly or indirectly, not counting merchants therein, and the others would be employed in all the other industries.

14055. So that that would be a very strong reason for making elementary agricultural science the most prominent of all?—We encourage it in the towns too at the present time. We hope in that way, and we think we have succeeded to a certain extent, in counteracting any tendency to congregate in the towns. We find now a good many going from the towns into the country. They thereby acquire a liking, or we think they acquire a liking, for country subjects, because they are taught to observe natural objects even although they belong to town schools. We think that it would be unhealthy to allow the sort of thing to grow up that, unfortunately, circumstances have created in other places. We have seen the beginnings of it, and our problem is simple, and we think it would be wrong for us if we did not solve the problem while it is simple, and we are trying to solve it in that way. So that there are town schools that have exceedingly good classes in agricultural subjects and school gardens. I may say that some of the best school gardens are in the neighbourhood of towns or in towns; sometimes town schools actually take land outside the town in order to have a school garden.

14056. Is that all you have to say about the elementary schools?—We pay grants to encourage the school gardens for what are called recognised classes under the Manual Instruction Act, whether in primary, or technical, or secondary schools. We pay 10s. a head the first year up to £7 10s. for each school—we pay a grant sufficient to meet the whole cost of the apparatus—that is practically what it is. Then we pay a maintenance grant after the first year—that is to all these schools—in addition to what we pay for the free places in secondary schools. Two-thirds to five-sixths of our pupils in secondary schools are now holding free places. There is no poverty clause, and so it applies to practically the whole population. If boys or girls reach a certain qualification they can get a free place. Those free places are tenable either in secondary schools proper or in district high schools (that is, primary schools with a secondary department attached), or in technical schools. The examination for those free places

Mr. G.
Hogben, M.A.
—
4 July, 1907.
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Mr. G.
Hogben, M.A.
—
4 July, 1907.
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is in two series—junior free places and senior free places. The junior free places are for boys or girls up to the age of 16, and before the age of 17 they can pass the senior free place examination, and can get senior free places up to the age of 19; and this also applies without limit of age, but limited to three years, in the case of senior technical scholarships. The important point with regard to the examination is that it includes among the subjects elementary practical agriculture, so it encourages them while they are holders of junior free places to take a subject which will count as much as any other science subject. They are encouraged to take that subject, and it has to be taken in connection with practical work in the laboratory and practical work in the school garden. Half the time must be devoted to individual practical work.

14057. Do you give any special instruction in the way of preparing them for other industries? Supposing a boy intended to become a seafaring man, would he get a course of agricultural instruction if he was going to take to the sea for a livelihood?—Are you speaking of the elementary and secondary schools?

14058. Yes.—Most of our people live in the country. If a boy or a girl is going to be taught elementary scientific method, even if the boy is going to be a sailor, it is no use taking him away to an environment with which he is not familiar. You must teach him elementary scientific method from the things that he is familiar with, and that he sees round about him.

14059. The only thing that occurs to me is that a seafaring man would see so little of those things when he was at sea?—You cannot teach a child elementary scientific method except from the things that are around him. So that even if a country boy is going to be a sailor, you cannot train him except from the things that his mind has been in contact with already in his own district.

14060. The class of boys who go to sea in this country, are generally boys who live in the towns or along the sea coast?—Then the nature study, if they live by the sea, would naturally relate to things concerning the sea, things with which they are familiar. It ought to relate to the things they are familiar with. That is our feeling at least. If you try to teach a boy scientific method by things with which he is not familiar, he will fail, because his mind is not prepared for it at all. That is the position we have taken up in framing our classes. Of course there are schools on the seaboard where they take nature study, they would study, naturally, things that are akin to the sea life. Our sea population is not such an important proportion of our population as our rural population.

14061. You have some classes for teachers in a great many districts?—Yes.

14062. Some of those classes are itinerant, I understand?—Yes; we have classes for teachers in nearly every district.

14063. I am talking only of agriculture?—Yes; I mean in agriculture. There are 13 divisions (called Education Districts), and in 1905 there were agricultural classes for teachers in eight of those, and I think there are this year agricultural classes for teachers in eleven or twelve out of the thirteen.

14064. Are they compelled to attend, or is their attendance voluntary?—It differs according to the Education Board of the district. It cannot be said to be compulsory in the strict sense of the word; but there are Boards who have given their teachers to understand that if they wish for promotion they must attend these classes, and that has produced the same effect.

14065. Do teachers attend these classes largely?—Yes; they are generally very popular.

14066. How long do the classes last, a day, a week, or what?—The classes generally last for about six months; they are held once a week for six months. Some of the classes take three or four hours on Saturday mornings; that is to say on Saturday mornings there would be two or three classes, and two hours' practical work; they are generally carried on by specialists.

14067. Do they teach such subjects as chemistry, geology, botany, and so on, in the teachers' classes?—These teachers' classes which are held by the Boards are not the only classes for teachers; because there are four university colleges, and several of the university colleges carry on work of a higher kind for teachers.

14068. I wanted rather to ascertain from you what the teachers were taught in these classes generally—the

nature of the instruction?—They are not all alike in any given year. There is a general resemblance in the complete course. They generally go on for several years. There is generally one good course of practical botany. Some of them contain courses of chemistry, and some of them do not. I am speaking only of the classes for teachers held by the Education Boards. Most of them, have contained, and in future probably all will include courses in elementary practical agriculture, more advanced than that done in primary schools; in fact the classes are intended to bring the teachers who have not in the past had an opportunity of receiving proper training, up to such a point that they can carry the pupils on, so that we shall not have to wait till the next generation of teachers comes; in the training colleges we are preparing the next generation of teachers.

14069. They take a course of nature study and also a course of elementary practical agriculture?—They do—that is, the students in the training colleges do so—and practically they must, take a course of science at the University College. We are bringing up their work a stage higher, more to the university rank, that is, the teachers that are to come; but the teachers who have already qualified in other respects we are trying to bring up to the minimum.

14070. When you speak of university rank are you referring to a State college?—Nearly all our institutions, in one sense, are State institutions.

14071. Is the College founded and maintained by the state?—It is maintained by revenues derived from a Crown grant of land; a grant of land was made by the Canterbury Association.

14072. I only wanted to ascertain whether it was private or public?—They are all public, in that sense, in New Zealand.

14073. I mean, maintained by public funds?—Yes, funds derived from a Crown grant.

14074. The College grants a diploma, I suppose?—The College grants a certificate, but not the degree of Bachelor of Agriculture; that is granted by the University of New Zealand. That is the only degree-granting body in New Zealand.

14075. What is the class of people who go to the Agricultural College—teachers or agriculturists?—The The majority of them are going to be agriculturists.

14076. Both sexes?—No, only men. There are some that are not matriculated students at the College. I could not give you the exact numbers, but it is probable that the majority are not matriculated. If they have matriculated, and desire to go on for the Bachelor of Agriculture, their course at the Agricultural College is recognised as part of the course for the Bachelor of Agriculture degree.

14077. The farm is not under your department, is it?—No, except that our scholarships would be tenable there. We grant scholarships and free places. We granted 550 scholarships this year, and about 6,000 free places, but, of course, those are not all for agriculture; only a few are so held.

14078. They are given to anybody who asks for them?—They are free to anybody who asks for them, if they show that they are qualified for a free place. Qualification means a good certificate of proficiency in the sixth standard, or the passing of the special departmental examination under 14. In the former case they must have passed the sixth standard under 14, the other examination is without limit of age.

14079. You also mentioned that you offer scholarships for the University?—Yes, the free places at the University, and the scholarships at the University are granted in the same way.

14080. With regard to the men who are actually farming the land, they have all been to an elementary school, of course?—Yes.

14081. Have most of them been to a secondary school, do you think?—No, not most of the older farmers, but now a very considerable portion of the population will either go to a secondary school or else to a technical school; I include the agriculturists.

14082. A few, of course, go to this Agricultural College of which you have told us?—Yes, there are not so many students there. I think that is capable of expansion, but the proportion there—you ask me what was the fact—is too great in my opinion of those who are going to be farmers. I think it should occupy a distinctly university position, and that the classes we are getting up all over

the country, in an organised form, should be for farmers' sons.

14083. Do the ordinary working farmers possess an elementary knowledge of science, or do you hope the rising generation will?—Yes, a knowledge of scientific method, and an understanding of the things about them, most distinctly. Practically, every holder of a secondary free place must take a science, and we are encouraging agricultural courses as much as ever we can. In every case we are giving the highest grants for that, and the probability is that a large number of schools will take that up. Last year I went through the majority of the secondary schools in the Colony, and in the country secondary schools there is a very large disposition to encourage the future farmer to take up this work, in fact, to insist almost that he shall take up this work, and you might say a very considerable proportion of those in the country secondary schools at the present time are going to be farmers—probably half of them.

14084. (*By Professor Middleton.*) Could you give us some idea of the syllabus of this elementary practical agriculture?—I will send you one—it does not include the higher parts of agriculture.*

14085. I am especially interested in this first subject—elementary practical agriculture—which you say is of such high educational value?—I think so.

14086. The value of which is so great apparently that you would even adopt it in schools in towns?—Yes, I do not say in all—some of them. We put the real educational value of it very high.

14087. You have definitely noticed that the effect of teaching this subject in schools in towns has been to check rural depopulation?—It is a difficult thing exactly to say what is checking the depopulation or increasing the rural population. There are so many things that enter into it; our land policy may have something to do with it, to some extent.

14088. But you do think this instruction you give really has something to do with it?—Yes, we think it has something to do with it, but to say definitely it had would be rather difficult.

14089. You have, at any rate, an impression that it is doing something towards it?—Yes, we feel that it is doing something towards it. I should like to add that this programme of elementary practical agriculture is also included as one of the subjects which a teacher may take for his Certificate, so that we encourage the teachers to take it; they can drop one other subject if they take that.

14090. Roughly, what is the age of the boys who would be taking this subject?—The average age would be 12 to 16.

14091. You expressed the opinion that too large a proportion of the students attending the Agricultural College belong to the class that were going back to the land?—It depends on what agricultural college means. The Agricultural College at the present time is serving two functions, one is, that it is the College that is recognised by the University as a College where a certain portion of the agricultural education may be received to qualify for a Bachelor of Agriculture. The Bachelor of Agriculture is a degree that is as hard to get as an ordinary B.A.—rather harder possibly, but there must be a college at which the specific technical instruction can be given, and the Lincoln Agricultural College is recognised for that purpose. It was originally instituted, some 30 years ago, as a college for the sons of farmers, and it is only because of the *personnel* of the staff that it is now wavering between the two. The personal qualifications of some of the men are very high, and it is really the *personnel* that led the University to recognise the College.

14092. Your opinion is, that in this particular College you ought to pay more attention to subjects of university rank and less attention to the lower grade subjects which would be required by a man who was going back to the land?—That agrees with the general policy of technical education in the Colony. I think there should be a great many local institutions to train farmers; but we think one central institution of the highest grade is quite enough.

14093. I may take it that it is to train experts and teachers and so on?—Yes, experts and teachers. Of course they may go on to farming, but we should not train them with that idea. We train them with the idea that they

are to be the actual leaders of the agricultural industry, either as teachers or in some similar way.

14094. (*By Mr. Latham.*) I think I understood you to say you did not know much about the State farms?—They are not in our department, but I have seen them.

14095. You cannot give us any information about them?—My information would be meagre. It would be that of an outsider except that when I wanted to see if our scholarships should be held there I satisfied myself with regard to them and came to the conclusion that they ought to be held there.

14096. Why I ask is because you say students who are likely to profit by them are allowed to attend for a time free. What time would that be?—Our free places are tenable there, and a research scholarship would be tenable there—that would be tenable for two or three years if necessary. Generally speaking, the time students would spend on the experimental farm would be six months. It would depend on what kind of farm it was. The experimental farms do not exist for the purpose of education; they exist as research stations.

14097. Is all the teaching that is given at the farms free?—There are no definite courses of teaching at the farm. There is a definite course of research going on.

14098. Perhaps I have used the wrong word. Is all the education they can get there free?—Yes, they will not have to pay anything, that is to say, if they are our students, but all our education is very nearly free, from top to bottom.

14099. I may take it that the whole of the education in New Zealand is free?—If a person does not qualify for a free place he has to pay, and there are a certain number who pay because they do not qualify for free places; but that is a smaller and smaller number.

14100. You say there is an agricultural college of the university rank and a dairy school of the same standard about to be established?—Yes, we have several dairy schools, but there is not one already established of university rank; there is one to be established of university rank. The Government has announced it.

14101. Do you think it is necessary to have a dairy school of such a high standard?—Yes, you want one central school. That of course is to train the instructors, and you want a good many others of lower standing.

14102. That is more for giving instruction to teachers?—For teachers and also for managers of big dairy factories; it is very important that managers of dairy factories should be well trained.

14103. (*By Mr. Davies.*) You told us about the training of all teachers in nature study. Is that compulsory?—The teachers that are going through the training college?

14104. Yes.—Yes, every teacher must take a course of nature study, even if he is going in for a degree.

14105. With regard to the teaching of nature study in all your elementary schools, has that been going on for a long time?—No, I cannot say that these arrangements have been going on for very long. The definite adoption of them in the programme is not more than eight years old, that is to say the compulsory adoption.

14106. So that you have hardly had time yet to be able to say exactly what the results will be?—Not of making it compulsory. Of course it was done before, but it was done in individual schools where the teachers did it on their own initiative. Of course nature study did not begin eight years ago. It began a good deal before that in a great many schools, but it has been made compulsory since then.

14107. You told Professor Middleton that you hoped that this policy would help to keep people on the land, and would do something to prevent the localisation of people together in large industrial centres?—Yes.

14108. This policy had been in operation for eight years, has it not?—Yes.

14109. So that it is rather early yet to see the results and that is why you cannot express any very definite opinion?—That is one of the reasons, of course; but a great many of those who take up land are only 18 years old, and if they were 14 or 15 when they begin to take up the subject some of them may have come under the influence.

14110. Do you find the agricultural classes in New Zealand are really beginning to realise the benefit of

Mr. G.
Hogben, M.A.
4 July, 1907.

* The witness subsequently forwarded a copy of the syllabus referred to.

Mr. G.
Hogben, M.A.
4 July, 1907.

agricultural education—I mean as it affects their own particular industry?—There are two classes of farmers—the farmers who do not seem yet to have appreciated the importance of it, and the farmers who appreciate it so much that they are urging the Government to do even more. There seem to be those two distinct classes. During the last two years the number of those farmers who take a very keen interest in that is increasing largely, and I think that almost every agricultural association and farmers' union has passed strong resolutions in favour of it, and a good many of them have subscribed money towards the formation of associations for carrying out the instruction.

14111. I think one of the features of your education system is that education is so very cheap as compared with other countries?—By cheap, you mean to the person that is benefited?

14112. Yes.—Yes, it is mostly free.

14113. Do you find that the people, especially farmers, appreciate it more than before?—Yes, they appreciate it ever so much more than before.

14114. They take advantage of the opportunities now presented to them?—Yes; it has doubled the number in the secondary schools. There is ever so much more interest. We know nothing of the idea that some people have, that if people do not pay for education they take less interest in it. The whole population now regard it practically as a disgrace if they do not go as far in education as they can. The effect of the free-place system has been to educate them up to the importance of education; they all know that they are paying for it through the taxes. They realise that, and it certainly has an educative value on the parents as well as on the children.

14115. You told the Committee about the Agricultural College. Is the Agricultural College isolated by itself, or is it a department of the University College?—It was once a department of the University College, but it now has a separate board of governors. The University of New Zealand recognises it as an affiliated institution, but it has its own government.

14116. Do you not think it is advantageous that a university should have an agricultural department so that the students in that department might mix with the other students in the university who are attending other departments, and in order that they might at the same time utilise the chemical and other laboratories which are part of the university buildings?—I believe that is the best arrangement, that is to say, for one of university rank; our students for the degree of Bachelor of Agriculture do take two years out of the four at the University College, with other students.

14117. If you were going to build a new agricultural college you would build it as part of the university?—I should advise the Government to do that, yes.

14118. Do you give any instruction in manual work as affecting agriculture?—Manual work is used in rather a narrow sense in England. Manual work in New Zealand includes science, where the science is applied practically.

You mean manual work as it is understood in England—woodwork and ironwork, and things of that kind?

14119. Manual work relating to agriculture, more especially in draining, hedging, gardening, digging, pruning trees, and that sort of thing?—In the course for our elementary practical agriculture it is stipulated that half the time must be given to practical work, and that includes manual work. The children must work the gardens, and do all those things.

14120. In the elementary and secondary schools?—Yes, it does not matter where—in the secondary schools where they take the subject.

14121. Have you any agricultural circulating libraries in different parts of the country?—Special agricultural libraries?

14122. Yes.—Several of the agricultural societies have. I know one or two have. I do not know how many. There are no Government ones; the Government subsidises public libraries, but does not say what books shall be put into them.

14123. Do you think that would probably be a good thing?—Yes, I think it would be a very good thing indeed.

14124. So as to keep students after they have left the College still in touch with their books?—Yes, I think that would be one means, and I think itinerant lectures would be another means. Our regulations provide for subsidising itinerant lectures.

14125. With regard to the experimental stations, is there any board of management directing the experiments which are carried on at those stations, and the research work which is done there?—The Agricultural Department is doing that.

14126. These experimental stations in different parts of the country are under the supervision and control of the Agricultural Department?—Yes.

14127. The Agricultural Department co-ordinates the results of all the experiments?—Yes, it has experts of its own, and the results are co-ordinated and published.

14128. How do they publish the results?—The results are published in several ways. When the area of investigation is a narrow one, the results are published tolerably soon in the form of leaflets, but when it is a wider one, it takes a longer time before they are published perhaps, and then they are published in a full Government report; but even the leaflets are summed up in the annual Government report. The Department of Agriculture has a good many sub-divisions like our Department—for instance, veterinary science. I have not touched on that at all. We are very strong in the support we give to veterinary science. It is so important from our dairying point of view; a great deal of attention is paid to it, and pamphlets are constantly being published on the subject. They are, I consider, fully educational, though our Department does not deal with that. Wherever there are classes or institutions our Department deals with them by subsidising them. That is where our Department comes in; and as regards the spreading of literature for farmers the Agricultural Department does that, and it pays the whole cost of the experimental farms.

TWENTY-SEVENTH DAY.

Wednesday, 10th July, 1907.

PRESENT :

The Lord BARNARD (*in the Chair*).

Mr. DAVID DAVIES, M.P.
Mr. F. D. ACLAND, M.P.
Mr. NORMAN LAMONT, M.P.
Mr. THOMAS LATHAM.

Mr. J. C. MEDD.
Professor T. H. MIDDLETON, M.A., M.Sc.
Mr. A. E. BROOKE-HUNT (*Secretary*).
Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. E. S. BEAVEN, called and examined.

14129. (*By Lord Barnard*). You know, I dare say, the objects this Committee have in view, to enquire into the existing facilities for affording scientific and technical instruction in agriculture, and to report whether those facilities are satisfactory and sufficient?—I do. I have stated to the Secretary that with regard to instruction I am afraid I have no facts to place before this Committee, and I am somewhat doubtful as to whether the evidence I have submitted a *précis* of is within your scope. It applies to the advantages of research in a special subject.

14130. I have had the advantage of reading the *précis* which you have given, and it is my opinion, and I dare say that of the Committee also, that we shall be very glad to hear your opinions. You are a maltster, I think, and have been for a good many years?—Yes.

14131. I see from these printed publications that I have in my hand that you have for years past taken a very active and unusually intelligent interest in the application of technical knowledge to the improvement of barley. The object of that is, as you say in your *précis*, to improve both the yield and the quality?—That is the object in view.

14132. You have conducted a great number of experiments to that end?—I have.

14133. What is the present attitude of the malting industry on the subject?—That is an extremely complex matter, and I should take up a good deal of the time of the Committee if I were to attempt to go into that in detail.

14134. Will you give us some information with regard to what you say in Paragraph 2 of your *précis*?—It has become recognised of late years in the malting industry, as in the case of milling, that it is desirable to have more than merely empirical and practical knowledge of the grain which is used, and there has been a great extension of laboratory work in connection with the routine of these industries.

14135. You undertake a great deal of laboratory work yourself?—I have done a great deal.

14136. Of course such work would have a very important bearing upon agriculture and would be of great use to the practical agriculturist?—I think so. Speaking generally, it appears desirable to have all the knowledge that can be obtained as to the effect of conditions on the value of the produce.

14137. In giving them information as to the actual grain which they ought to grow?—That is so.

14138. With the object, as you have already told us, of improving both the quality and the yield?—Yes. I attach special importance, I may add, to experiments directed to the increase of the yield of barley, and more particularly with reference to the specific qualities of new varieties.

14139. You desire to illustrate that by reference to what has been done in the case of the beet sugar industry?—Yes. I think the fact that there has been such a great improvement in the composition of sugar beet as a con-

sequence of prolonged investigations, from the chemical and biological point of view, is an illustration of what might be done with other plants, and the introduction of improved sorts. I do not suggest that there is the same scope, or that there is the possibility of so great an improvement as has taken place with regard to sugar beet, but I think there is some considerable scope. I only refer to this as an illustration.

14140. It is within your knowledge that the improved varieties of beet which are now cultivated have practically been to a very large extent the result of scientific research?—Undoubtedly, as the result of prolonged and systematic investigations.

14141. You think that a similar process might be applied to barley in this country?—Yes. I am not hopeful of so great results in that direction. As a matter of fact very good barley is already grown in this country, and the problem with regard to barley is, perhaps, rather a question of improving the yield and still maintaining the quality.

14142. What is your experience of the facilities which exist in this country for such work?—This may be considered from two points of view: first as to original research on strictly scientific lines directed to agricultural problems. This has been and may continue to be carried on to some extent by private individuals; but, speaking generally, the resources of well-equipped and well-staffed institutions are desirable. Secondly, there is the work of field trials and demonstrations. I should say with regard to institutions in which research is carried on in this country that we are not well supplied with such institutions.

14143. As compared with foreign countries, for instance?—Well, as compared with Germany, I can give an illustration from my own experience. Some years ago I was anxious to obtain as complete a collection as possible of botanically distinct varieties of barley, with a view to more close study of their characters, and I found there was no such collection as that in this country. There is at Kew a collection of all kinds of plants, which no doubt are of great interest from a purely botanical point of view, but there was no institution in this country from which you could get anything like a complete collection of seed representing different varieties of agricultural plants, and I was obliged to depend almost wholly on foreign sources for the collection which I was able afterwards to make.

14144. What did you do?—The Board of Agriculture were good enough to give me a great deal of assistance in the matter, and I found that there were two German Professors, Drs. Kornicke and Werner, at the Landwirtschaftliche Akademie at Poppledorf, near Bonn, who had been studying grain to what may be called an encyclopædic extent, and they were the authors of a standard work, "Die Handbuch des Getreidebaues," which is practically the only standard work in existence at this moment on grain—on the different varieties of all

Mr. E. S.
Beaven.
—
10 July, 1907.
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Mr. E. S.
Beaven.
—
10 July, 1907.
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the cereals, and if one wants precise knowledge on that subject one goes to that text book. I found that they had been conducting researches for a great number of years at Popplesdorf, a very large and well-equipped institution; it was there that they had carried out the researches of what one may call almost a historic character, the results of which were embodied in their book. They were good enough to send me a complete set of seed from all their cultivations. A great many of them, of course, are of no practical value, but they are of considerable scientific value from the point of view of a study of the subject of variation in barley.

14145. In fact, you could get in Germany what you could not get in England?—Exactly.

14146. Do you know whether this institution at Popplesdorf is supported by the Government, or maintained by the Government?—I do not.

14147. There is no institution of that kind in this country, is there?—I should say there is no institution at all approaching it in extent.

14148. You think we ought to have such an institution?—I think so, but at the same time I would like to say that I think that the extent to which those kind of institutions have benefited German agriculture is a matter for inquiry. I have been at Popplesdorf, and I have seen that institution, and I know the kind of work that is carried on there. I believe it is one of many of a similar kind in Germany, but I spent a month last year in Germany, and on the whole one is not impressed with the idea, in North Germany at any rate, that we have very much to learn from the Germans as regards practical agriculture. My knowledge of German agriculture is, however, very limited.

14149. You do not suggest that we should slavishly copy such institutions. You think we might get some hints from them in improving our own?—Exactly, I think it is a subject which very much needs to be inquired into, as to the work which is being done by the many institutions of that kind in Germany, and how far it is of assistance to practical agriculturists.

14150. Is that all you have to say with regard to Germany?—Yes.

14151. You have also made some inquiries on the same subject, I understand, in Denmark?—I found that in Denmark they had given more attention to the particular subject which I was studying, as far as I could make out, than any other country—I mean from the practical point of view. What I have said with regard to Germany relates to the academic point of view rather, the existence of institutions where research and instruction has been carried on. In Denmark I found very excellent practical results had been obtained, largely through the operation of the Royal Agricultural Society of Denmark, and I came in contact with and had long correspondence with the officials of that Society, and I found that they had conducted their experimental researches in respect of barley—I am confining my evidence now entirely to that—on a much more complete scale than anything of the kind had been done in England with respect to varieties of barley. I would not say that their results were more valuable than those for instance at Rothamsted, but Rothamsted is practically the one institution of that kind that we have in this country—I mean where for a great number of years attention has been directed to solving definite problems, and it has necessarily confined itself to a comparatively few agricultural problems.

14152. They have been carrying on investigations in Denmark, extending over many years, to determine definitely the types of barley best suitable for cultivation in that country?—Yes. Since 1882 they have been steadily at work on this subject at several stations in different parts of the country.

14153. Is that Society in Denmark a voluntary society?—I cannot answer that.

14154. It probably has a grant from Government—You do not know that?—I do not know that.

14155. Is the work which they have done very important?—The work which they have done is excellent in its method, and has undoubtedly produced results of great value. The results are recognised by the agriculturists and growers in Denmark to be of great value. May I say there is one gentleman in London who helped me very much in this matter by putting me in contact with those who were investigating this subject in Denmark, that is Mr. Harald Faber: I believe he represents the Danish Government.

14156. You have something to say on what they have done in Ireland in the same direction?—The Department of Agriculture and Technical Instruction in Ireland has

conducted experimental investigation in barley growing very much on the lines of the Danish investigation, with results which appear likely to be of considerable benefit to Irish cultivators, more particularly in the direction of determining the value of different varieties of barley. I think it is an important point that in both these cases there has been co-ordination of the work by a central body, and the objects in view have been quite definite. In this way the results which have been obtained have been brought to a focus and collected together in such a way as to be available for distribution amongst growers. In this country I take it there has been a great amount of experimental culture done, but a good deal of the information is not available and it does not compare. One set of plots, for instance, in one county are conducted on one system and another in another county on a different system; there is no general direction, and if one wanted to answer a question as to the suitability of particular varieties to particular soils—I give that as a mere illustration—the work which has been carried out hitherto in this country is not applicable to the solving of such problems.

14157. Would it be your view that the Board of Agriculture, as a central authority, should subsidise or assist financially all research work of this description all over the country, in order to get the results on different soils and climates co-ordinated, and in return for the subsidy should be entitled to own, so to speak, all the information obtained, and prepare it for dissemination?—I believe that it is important that there should be co-ordination by a central body, and there appears to be no other possible central authority except the Board of Agriculture. They seem naturally to be the proper central authority for this kind of work, and of course in addition there must be local co-operation.

14158. Having got the information, I gather from what you say you regard it also as of great importance that it should be disseminated amongst people who are to make practical use of it?—That it should be edited and issued and put out by a body in whom the agriculturists would have confidence like the Board of Agriculture.

14159. Of course you are aware of what has been done by the Lawes Agricultural Trust and that certain work of this kind has been done by the Universities and by some of the agricultural societies?—Yes. With regard to research work requiring attainments of a high order, the individual qualifications needed for work of that kind are of a special nature, and the number of institutions capable of doing that kind of work in England appears to be very limited, but certainly we have two institutions at least, without referring to the agricultural societies, which have done and can do excellent work. We have the Lawes Agricultural Trust and the Department of Agriculture at Cambridge, which appear to be eminently qualified for carrying out research work. I believe those bodies are more or less hampered for want of money, and it is highly desirable that the difficulty should be removed.

14160. It is also highly desirable that the men who are engaged in doing that work should be well paid?—Yes, if you wish to get the best men.

14161. Of course it is only recently that this particular kind of work has actually been taken up by Cambridge and these other bodies that deal with the higher forms of science, but possibly the class of men who would be qualified to do the higher kind of work will increase, particularly if openings are provided for them, but that will not be so unless posts are created which they can occupy after they have been trained so that it is absolutely necessary that funds should be provided for the purpose?—Quite so.

14162. You are well acquainted with the work that has been carried on at Cambridge?—I am well acquainted with the work that Cambridge has done, and I think it has a special application to the subject under discussion. In that case they are carrying on investigations in what may be called a new branch of biological science applicable to agriculture, and with most hopeful results from the economic point of view.

14163. I should like to ask you whether the other members of your business hold similar views to yourself or whether you are only giving us your own opinions?—I am only speaking for myself. I have no authority from and I am not representative in any way of any body of individuals. As far as I know there is no body specifically representing maltsters.

14164. You have no trade society?—No, not representing maltsters.

14165. As a maltster of experience yourself, do you consider that maltsters, generally, would be benefited,

Mr. E. S.
Reaven.
10 July, 1907.

commercially speaking, if better classes of barley were grown?—Certainly; but looking at it from the agricultural point of view, it must always be recognised that there are very great limitations in the application of research to the improvement of agricultural products. The results to be hoped for must be very slow of attainment. Obviously by far the most important conditions affecting the intrinsic values of agricultural produce in this country as compared with other countries are beyond control—the conditions of soil and of weather. One finds when talking to one's agricultural friends that the replies generally are, "If you give us good seasons we will give you all that you require." That has another application. All these researches must be exceedingly difficult and tedious, and must be carried on for long periods of time, because what is true of results obtained in one season is not true of results obtained in another. At Rothamsted the work of Lawes and Gilbert is an illustration of the great length of time which it takes to establish definite conclusions.

14166. But that is no reason why the work should not be carried on?—There is every reason, I think, why it should be carried on, and why more work of the kind should be put in hand.

14167. You are a member of the Agricultural Committee of the Wiltshire County Council, and, I think, you have something to say as to your experience in connection with the instruction and demonstration carried on in that county?—I am quite familiar with the agricultural work of the Wilts County Council. I have been a member of the Committee since its inception.

14168. Are you satisfied that good work is being done?—I am quite satisfied that good work is being done, probably as good work as in any other county.

14169. And work which is useful to the practical farmer?—Work which is distinctly useful to the practical farmer. I may mention, especially, the dairy work and the farriery school. I should like to say that I am not here in a representative capacity. I am speaking merely as an individual member of the Committee.

14170. Have you any suggestions to make to the Committee on the subject? We have had full information from them as to what is being done?—I think you, probably, have all the information which you require and in a more complete form than I could give it to you in regard to the work of County Council Committees generally, but one suggestion I would like to make is that Agricultural Committees, as distinct from the general Technical Education Committees, are likely to do better work where they are separately constituted bodies.

14171. I dare say you know we have had evidence on that point from other witnesses who are of the same opinion?—Yes. I believe you have had full evidence on that point from other witnesses.

14172. Is there anything else you would like to add to the evidence you have given us?—With reference to the necessary qualifications for county lecturers and demonstrators, I may say that I am in entire agreement with the views of Mr. Trustram Eve, whose evidence on this point I had the advantage of hearing. I entirely agree with the views he put forward with regard to that.

14173. (By Mr. Norman Lamont.) You say at the beginning of the summary of your proposed evidence that "There are in existence in Great Britain institutions capable of organising research," and you instance them, and then you go on: "All these bodies, however, are more or less hampered by want of funds." I should like to ask whether you suggest that if these bodies were given adequate funds their researches should be suggested and stimulated by the Board of Agriculture, for instance, or the Agricultural Organisation Society or the Royal Agricultural Society, or some other central body so that they should all be working upon the same lines?—In the case of the Lawes Agricultural Trust and the Department of Agriculture at Cambridge—I speak of those two bodies because I know of their work and not because I suggest that there are not other institutions of the same kind; there probably are, but I am not so well acquainted with their work—I would say that they are probably in a position themselves to suggest and to know better than anyone else the lines of investigation which they could best undertake, and that they have already in hand work which needs further financial assistance.

14174. That is rather my own opinion; that each of them should be allowed to work out its own salvation, rather than any effort should be made by any central authority to co-ordinate their work?—I agree entirely.

14175. The juxtaposition of that paragraph to the one with regard to Denmark and Ireland, in which you say in Denmark and in Ireland the investigations have been conducted with control by a central authority, caused me to ask the question. This paragraph following that one rather suggested to me that you were of opinion that these institutions should also be co-ordinated and controlled?—No. I was referring more particularly to the particular kind of investigation that had been carried on in Denmark, where you have a large number of experimental plots in different districts but with a definite and single object in view, and where they have to be distributed over the country in order to answer problems which are connected with the different soils and situations and the different climatic conditions which prevail in various parts of the country. Where the common object is the same it is highly desirable that there should be co-ordination of the work.

14176. (By Professor Middleton.) I think your answers to Mr. Lamont have made it quite clear that you were speaking of two types of experimental work in your evidence, and that it is what we have been accustomed to call the field or demonstration plot in this country which wants co-ordination and control?—Yes, that applies to the carrying on of field trials with a view to showing the average results which may be expected in different districts over a series of years.

14177. But the work done by specialists at central institutions, in your opinion, needs no control?—Which in my opinion, had better be left to the bodies themselves those bodies being fully qualified to undertake it.

14178. Of course, if a person is fully qualified you would not interfere with him?—Quite so, but I take it that the number of those fully qualified is very limited in this country.

14179. Your evidence amounts to a plea for a more systematic work to be done for the agricultural industry and you have taken barley as an example?—Yes.

14180. You say our work hitherto, with regard to barley has not been enough to satisfy the needs of the farmer and the maltster?—That expresses my view.

14181. And in fact that so far as the farmer is concerned perhaps we have not any very definite knowledge to give him on the subject of barley?—I think that careful application of the work which has already been done in Denmark and Ireland alone to this country would be likely to have very good results from the point of view of the agriculturist looking at it from the purely agricultural point of view.

14182. But that is after all a matter of opinion. It is a thing which has not been demonstrated in this country itself, and, therefore, if you set out to teach the British farmer from your experiences in Ireland and Denmark he might not believe you. He might want some further demonstration actually carried out in this country, and the results placed before him?—Yes, but at the same time I would rather lay stress on the point that what is needed is not so much instruction as research.

14183. I quite agree with that, but what I am trying to point out to you is that before you can have a desire for instruction you must have some valuable material with which to instruct?—I think that is quite my point of view put in another way.

14184. In the case which you have put before us, we have not got that valuable material in England as yet, except by inference from what has been done in Denmark and elsewhere?—Yes, similar work requires to be done here.

14185. I merely refer to this as an explanation of the farmers' apparent lack of appreciation of instruction. You have not got the instruction to offer him in this case, and therefore, he cannot appreciate it if it is not there?—It is not there. You have not sufficiently good matter to offer the intelligent agriculturist—the large grower, at any rate. No doubt the small cultivator can be taught how to use manures and such like things by means merely of demonstrations, but we have arrived at a point where at any rate, the larger growers, who are responsible for the main part of the agricultural produce of the country, are now fully acquainted with facts with regard to such subjects.

14186. What you have shown us is that even if you take up any special crop, such as barley, there is a great deal of work to be done with regard to that particular crop before we are in a position to instruct?—Undoubtedly; that is the point which I wish to emphasise. The whole of the research work that has been done with regard to barley is probably little compared with what might be done.

Mr. E. S.
Beaven.

10 July, 1907.

14187. And, perhaps, barley is in some respects typical of other crops?—I think so.

14188. Are there any other crops with regard to which the possibilities of improvement are greater than in the case of barley?—I am not at all prepared to speak with regard to agricultural problems generally, but I think it is a matter of common knowledge that there are many other agricultural plants which have been improved of late years as a result of work of this kind, and doubtless there are others that may be. The work has been mainly carried out by seedsmen, but a great deal of the purely scientific work which requires to be done yields no profit, and, therefore, it has not got done so far.

14189. And the country suffers accordingly?—The country suffers for want of it to the extent that it has not been done.

14190. (*By Mr. Latham.*) Referring principally to the farmers, do you not think that they would feel that they could not be taught these special lessons that you have put before us?—I think investigations should be applied to definite practical objects, and I think if it was demonstrated, for instance, to take an example, that there were particular varieties of particular plants which were suited to particular soils and situations—I merely use that as an example—if that was demonstrated and made clear, that the British agriculturist would immediately take hold of facts of that kind, and to his advantage.

14191. It is of such a very indefinite nature that it would take a very long time to bring this to the notice of the farmers with an idea that it would be profitable for them?—I have said already that agricultural research of particular kinds appears to me to be dependent upon so many factors, that one is sure that it will take a long time to arrive at definite conclusions.

14192. I am rather afraid we must look upon you as almost the only person who takes such a great interest in this particular work with regard to barley. Is that so?—No, I think not. I would not like that impression to prevail at all. I think there are many others.

14193. To put it rather in another way, there is scarcely anyone who has come to the front like you have done on this particular question. There has been no great outcry from the farming interest generally to have this work carried out?—That is so.

14194. Is that because of their ignorance and because they do not understand the value of it?—That is a very difficult question to answer. I think the larger growers, at any rate, are more up to date in method than in any other country, but that there are still investigations to be made which would be of value to them can hardly be doubted. I do not think I can say more than that.

14195. Still, the British agriculturists have produced some of the best barley in the world?—Undoubtedly. I have said so.

14196. And I suppose your remarks would apply very much to almost all the produce we have?—Yes, I think it will be agreed with regard to almost all agricultural produce there has been considerable improvement and that there are further possibilities.

14197. I suppose this question of research would apply to almost all the products that we have?—Certainly. I am simply using barley as an illustration, because I happen to know more about that than I do of any other agricultural product.

14198. The question of research does not end with barley so far as agriculture is concerned, but wants going into with regard to almost all the products that we have?—I imagine with regard to wheat there is a much stronger case than there is with reference to barley, and I believe you have had evidence as to that here. I could have referred to the work that has been done at Cambridge with regard to wheat, and I have no doubt that what I have said with regard to barley applies to practically all agricultural products.

14199. The reason why this research has not been made so much of as it ought to have been is because of the ignorance that we have been labouring under?—I am sure we all of us have a great deal to learn. I will put it in that way.

14200. Just one word with regard to your profession. Have maltsters generally made any very great demand for this research work?—No, I should not go so far as that. What maltsters have done they have been compelled to do largely owing to the conditions of trade generally, and as the effect of competition they have had to investigate

much more closely than they used to do the character of the produce which they use. A laboratory, for instance, is now a necessary adjunct of every large malting business, and the material which the maltster is about to use and which he has manufactured, both his barley and his malt, go through to a more or less extent laboratory examination.

14201. I presume, then, that you would advocate much more science in this department, to prevent what I should term possibly the thing not being done on as good a line as it should be?—Quite so.

14202. I suppose we may take it that this will never be done in the way you suggest it should be done unless it comes from the hands of the Treasury?—I am quite sure that there are some institutions already doing good work for the benefit of agriculture that are hampered for want of funds, and that there is every reasonable probability that good results would accrue from those institutions being better equipped with funds.

14203. Would it not be very beneficial, from the point of view of climate and soil and that sort of thing, that research work should be going on at all those institutions that are coloured on the map there?—At a great many of them. I know very little of the actual working of some of the institutions, but assuming that they are well-equipped institutions like, for instance, the one in Yorkshire and the one in Northumberland, that would be desirable. Some of the university colleges have either commenced or made good headway with work of this kind, and it is desirable that those institutions should be scattered about the country more or less, because the conditions and the produce in different parts of the country is very diverse.

14204. You spoke of the variations in climate and soil, and that, in your opinion, that would be really the only way of meeting that difficulty?—It is absolutely the only way. The results which are obtained, for instance, at Wye in the average conditions which prevail with regard to soil and climate in Kent, would be absolutely inapplicable and have no relation whatever to results which might be expected in Northumberland.

14205. I see you allude to the great agricultural societies. Is not this a question which it might be an advantage for them to enter into?—I know that the work which has been carried on by the Royal Agricultural Society at Woburn has very largely confirmed the work which has been done at Rothamsted, and has been very useful, but at the same time I am not sufficiently acquainted with the possibilities to say much about the work of agricultural societies generally in this particular connection.

14206. The whole thing is of such an important character that the minuteness of the returns would barely be expected to come from the agricultural societies, you think?—I am not well enough acquainted with the resources of the various societies to give an opinion.

14207. (*By Mr. Medd.*) You spoke of the advantage that you had derived from Cambridge?—I did.

14208. And the possible advantage that you might derive from other places that you mentioned, such as Newcastle and Leeds, and so on?—Yes.

14209. Do you not think similar advantages might be obtained from Cirencester?—I do not know the extent to which Cirencester is equipped, but as it is the oldest of our agricultural colleges I imagine that they would be well equipped for dealing with research.

14210. That is my opinion. I know it intimately, but not as an agriculturist. There is an intention to make Cirencester a collegiate centre for Wiltshire and Monmouthshire, and possibly Hereford. That is only in prospect at present. Unfortunately the chairman of the governing body is abroad, but in the event of such a centre being formed at Cirencester, would not your Wiltshire farmers feel much more satisfied in going to a place close to them, where they could inspect the work very much more easily and ascertain the results of the work very much more easily, work which is so closely in many matters, social and otherwise, associated with Gloucester?—Undoubtedly the closer institutions are to agriculturists the more benefit they would be likely to derive from them.

14211. (*By Professor Middleton.*) You spoke about the much greater attention which the maltster has been giving to the quality of malt and barley within the last few years. Is it not the case that we have had many complaints about the quality of English barley within the last 10 or 12 years?—There is a general impression that the quality of English barley is not as good as it used to be—the average quality.

14212. Is it not the fact that while there is a great deal of good barley in the country there is also a great deal of very bad barley in the country? Is it not very variable in quality?—That is so, but at the same time I would attribute that largely to the character of the seasons and other matters which are out of the control of the individual agriculturist.

14213. Even in similar seasons, when a district has had a season which suits it, you will find good and bad barley coming from that particular district. Does not the maltster find that barley is a very variable product?—It is an extremely variable product.

14214. That shows that some men or some conditions produce good quality while others produce an inferior quality, and that there is, therefore, room for improvement?—Yes. It is only fair to say that many agriculturists would answer in reply to that, that is largely a question of prices, and that it has not paid the farmer to give special attention to the quality of barley, but rather to consider the yield.

14215. (*By Mr. Latham.*) You know there is a larger

quantity of barley being grown now after green crops than formerly?—Yes.

14216. Does that tend to an appreciation of it or a depreciation of it?—I should say it tended to depreciation; but at the same time I am inclined to think that at present prices it increases the yield to an extent that more than compensates the farmer from the agricultural point of view.

14217. Is it a better barley for you as a maltster?—No, it is not so good.

14218. (*By Lord Barnard.*) I suppose you know the Board of Agriculture have not overlooked this subject of research. You have heard perhaps that the matter is under consideration, and that proposals for the extension of research work are being considered?—I have heard that, and I suggest that it would be very desirable that this should be done.

14219. Are you a barley grower yourself?—I grow barley every year; a matter of a few acres for experimental purposes.

14220. You do not farm?—Not otherwise.

Mr. E. S. Beaven.

10 July, 1907.

Mr. CHRISTOPHER TURNOR, called and examined.

14221. (*By Lord Barnard.*) You own a very large agricultural estate in Lincolnshire?—I do.

14222. Is it entirely in Lincolnshire?—Entirely.

14223. You farm a great deal of land yourself?—I farm 3,000 acres.

14224. You take a great interest in the development of higher agricultural education in rural districts?—I do.

14225. I believe you are a member of your County Council?—I am.

14226. Which Council is that?—The Lindsey County Council.

14227. Are you a member of any agricultural committee of that Council?—Only of the Small Holdings Committee.

14228. You are a member of the County Councils Association?—I am.

14229. They have asked you to come here, so that you have come in that representative capacity?—Yes.

14230. I believe you have given a good deal of consideration to this subject of higher agricultural education?—I have for a good many years back, both in this country and abroad.

14231. What is the general principle which you lay down as to agricultural education?—My own feeling is that one wants a consecutive and complete system working from the elementary schools, through the secondary schools and farm schools, to the higher agricultural education; that we want to distinguish the higher agricultural education from the education for farmers' sons; we want to distinguish between the education of the men that are going to be directly associated with land and get their living off the land and the expert. I think that the agricultural courses at agricultural colleges or at universities almost, such as Oxford and Cambridge, and perhaps one or two of the other universities, is the right place for teaching the expert.

14232. With regard to elementary education, you are, of course, aware that that is really outside the scope of our enquiry?—Quite. My only feeling was that we should just touch upon it as the foundation for working upon, because I feel that if the elementary and secondary part of education is in any way neglected, much time may be lost in finally dealing with the higher, because after all the higher is supplied from the elementary and secondary sources.

14233. Of course you understand as this is a Departmental Committee we only report to the President of the Board of Agriculture and he has no power over secondary or elementary schools, although he might, if he thought fit, make recommendations to the Board of Education on the subject?—Exactly.

14234. So that practically in that way it might be touched upon. The County Council Sub-Committee on Rural Education, you say, have issued a recommendation which fairly well meets the case of the elementary schools?—Yes.

14235. What was that recommendation?—Chiefly with

a view to increasing nature study in the elementary schools and giving an agricultural bias to the existing education to interest the children that were going to live on the land, or ought to remain on the land, and at the same time from a purely pedagogic point of view to give them the teaching which experts admit generally is one of the most valuable trainings for the mind and the intelligence, and hand-in-hand with that nature study, to have school gardens where practical gardening can be taught at the same time, using the school garden as a demonstration ground for nature study, and, as far as possible, to bring in agricultural arithmetical problems, bearing on everyday life, instead of the abstract text-book problems which I am sure interest the children very little.

14236. Have you in your mind farmers or labourers, or both?—Both.

14237. Your opinion is that it does not much matter whether a man is going to work in a country district or not—that such training is equally valuable to him?—Equally valuable. I have had very clear evidence of that in some cases of manufacturers and merchants saying that they find with boys coming from a school where there is nature study and school gardening properly taught, that their intelligence was very much more developed, and that they were really worth 50 per cent. more to them than boys who had not had that training.

14238. Have you anything to say on the subject of secondary schools?—Yes, just to touch upon it in general terms, I feel that there again, where there are scientific courses in rural grammar schools and secondary schools the scientific instruction should have a rural bias and be of some use to the farmers' sons. At present such farmers' sons go to the secondary schools as have no instruction given them in most counties that would interest them in the land, or really so to stir their interest as to make them wishful of going on to a higher institution, which I think is one of the chief functions the secondary school ought to fulfil.

14239. Are the farmers' sons fairly well educated in Lincolnshire?—Fairly well, and a fair number of them go on to the Midland Institute.

14240. I was rather referring to their general education?—Yes, they are fairly well educated generally. You see the farmers in Lincolnshire are bigger men and are generally well off for farmers.

14241. Have you in any of the districts in Lincolnshire what is known as an agricultural side to your secondary schools?—I am not aware of any one with a definitely agricultural side. I am afraid we are rather behind in that matter in Lincolnshire.

14242. (*By Mr. Latham.*) Do you really think you are behind in not having agricultural sides to your secondary schools?—I would like to see agricultural sides to secondary schools. I want to see definite farm schools as well, but in country districts where there is at the present minute only the secondary school, I think that until other schools come that can take their place, that in those secondary

Mr. C. Turnor.

Mr. C.
Turnor.

10 July, 1907

schools the scientific education that is given ought to have an agricultural bias.

14243. (*By Mr. Medd.*) Do you know Beckford School in Somerset, Mr. Henry Hobhouse's?—No. I have heard a very little about it.

14244. That is a type of school you would wish to see?—Precisely.

14245. Where everything is differentiated towards rural subjects?—Exactly.

14246. You in Lincolnshire have neither one nor the other?—We have neither one nor the other.

14247. (*By Lord Barnard.*) A great many witnesses have told us that the only places where the practical farmer can learn his business is on a farm?—I quite agree, but I do look upon an inclination towards agriculture being given in elementary and in secondary schools as most important, because we know a lot of young farmers do not learn their business on their farms for the reason that a great many of them are not sufficiently instructed in plant life and growth to take any interest in their work, just as you can have a gardener in a school garden who will show a boy how to dig, and perhaps teach him to dig fairly well, without interesting him the least in the work. That is where advanced pedagogy comes in in instructing the child to take an interest in his work rather than become a mere mechanical machine—to interest him and make him thoughtful and intelligent in what he is doing.

14248. Perhaps you will agree with what other witnesses have told us that before the lad goes on the farm he should have the best general education that he is capable of receiving?—I quite agree, on the condition that such general education should not be of an abstract character or too much based on text books.

14249. Your idea is that you can give that general education with an agricultural bias quite as well if not better than without it?—I consider better than without it.

14250. What you have said about elementary schools applies very largely to secondary schools?—It does.

14251. We have been told that if you get a well educated young man, and he subsequently has had two years' practical experience that it may then be a great advantage to him to go either to an agricultural college, or perhaps almost better, some witnesses think, through short winter courses at some agricultural institution. I suppose in Lincolnshire they go to the Midland Institute?—Yes, for a definite course at the Midland Institute, and I have always found that that course has been directly beneficial.

14252. You are of opinion that money which is spent in other ways than in the giving of an agricultural bias is wasted?—I would not go so far as that. It depends upon what type of instruction is being given, but I think at present a great deal of money is being wasted in the present agricultural education because it is not beginning at the beginning, but, rather, much money is spent on advanced courses and lectures, which are not attended by the people that it is desired to reach; largely because the bias has not been given in the early days in the elementary and secondary schools, and my opinion is that in the present state of development a great deal of the money now spent in lectures might be much better applied in giving that bias in the elementary and secondary schools, and then when there is more demand for it, later on, to develop the system of lecturing further.

14253. I forget whether you have lectures in your district or not?—Yes, we have at times.

14254. You are perhaps aware that the system of lecturing is rather on the decrease?—Yes.

14255. At the same time it is felt by many witnesses here that lecturing is an extremely valuable means of arousing interest amongst the farmers?—I think that the system of lecturing can be made most splendidly useful in that respect, but as I say, I think that where the village squire or the clergymen gets the lecturer down and he and his family go to hear him lecture with perhaps two labourers in the background and a farmer and a farmer's son, because that is generally about the audience, that very little benefit is derived, and I think we can learn a great deal from Italy in that respect. They found in Italy that these lectures did very little good until they had first roused interest by taking groups of farmers and labourers to an institution and showing them all the wonderful things that were going on there in the shape of experiments and so on, and then after that giving them a course of lectures in the district explaining further to the farmers what they had already seen in the institute and the kind of work that was done there. The first set of lectures they gave in Italy were a

failure, but the second set carried out on the lines I have just indicated were very very successful, and I think it would have the same result in England.

14256. In many cases we have been told that the lecturers have got into communication with farmers, and that very beneficial results have followed by encouraging farmers to seek information from them and take an interest generally in improved methods?—I quite agree with that, but so much depends on the lecturer, whether he is a man who is able to influence the farmer or not.

14257. Yes. We have also been told that farmers are very quick in finding out if a lecturer is making a mistake of any kind?—They are very quick indeed.

14258. You think the agricultural industry in this country is not treated as well as other industries, by not having a sufficient amount of money allocated to it?—That is a point I was making. The amount of "whisky money" spent in education directly benefiting agriculture, to take the Lindsey Division alone, within the last two or three years has decreased from £1,800 being spent upon agricultural education to £1,000. That is on agricultural education in the widest sense for lectures and every possible thing. I would like to see £2,000 spent on education directly beneficial to agriculture, and I would include in that an increased number of holiday courses for teachers at the Midland Institute. I advocate the spending of more money in increasing the agricultural bias to the instruction given in the elementary schools and secondary schools, increasing it generally, and finally if there is a demand for it, increasing the number of lectures too, but I would let that come last, after the interest had been roused by other means.

14259. On that point it is scarcely benefiting agriculture at the expense of other industries, because in your opinion that is more in the nature of general education?—Yes, it is general education. I consider you cannot benefit agriculture without benefiting other industries. I am very strongly of opinion that you must look upon agriculture as an industry outside of and apart from other industries, because it really is the foundation of the social condition of the country, and one must take that stand for agriculture, and therefore that what benefits agriculture will be benefiting other industries too. That was realised in northern Italy very strongly, where those in authority made manufacturers and merchants realise that their best market was in northern Italy, and that to improve that market and to increase it they must improve the education of the agriculturists. They took steps to do that, and we have seen the result. The improvement in northern Italy has been most marvellous. Every sort of agricultural facility is now given in Milan. I like the word "facility," because it covers a great deal.

14260. I see you mention Belgium. Are you familiar with what is done in Belgium?—To a certain extent only.

14261. You compare Belgium with England?—Simply this: that although Belgium is a free trade country they have followed what I think is a sound axiom of political economy in fostering wisely the producer, considering that agriculture is the chief industry in the country they have given it its full share of educational and other facilities. They consider that there the agricultural producer is the most important man in the country, and they have given him every kind of facility that is possible in the way of agricultural education, and agricultural banks; also the movement towards co-operation in Belgium has been very remarkable, whereas with us after 10 years we have only a turnover of some quarter of a million in all our agricultural co-operative societies. In Belgium I believe it is something over eight millions a year in the different centres. Belgium has done all this for agriculture without in the least prejudicing the other industries, since at this present minute Belgium manufactures more per head of its population than any other country in the world; I believe 50 per cent. more than England; and at the same time Flanders feeds its whole population off home-grown food stuffs.

14262. May I ask what the population of that country is?—The population of Belgium is the densest in the world except China—588 people per square mile, which it feeds entirely off its own home-grown food stuff. The figure in England is 133 fed off home-grown food stuffs; and in Belgium again, where small holdings have been very largely developed, about the highest average production per acre that is reached. I cannot give you the figure of the turnover per acre, but I know from talking to the

head of the Belgian Agricultural Bank that the annual average savings of a father and two sons, working on a 25 acre holding, has been as high as £80 per annum after paying all their expenses. That was in the particular district round Bruges. I did not go into the question how far that extended all over Belgium, but taking it that a similar holding in Lincolnshire is giving the head of the family about £75 a year to live upon—I believe that is how it works out, although it is hard to get data in England—it shows that Belgium is producing very largely and very profitably. Of course it must be remembered that they live frugally in Belgium, and that they have not the standard of living that we have in this country.

14263. I suppose it is very good soil?—It is very good soil, but I think we are better off in this country, both in the way of soil and climate.

14264. What is your opinion of the source from which we ought to obtain a grant for agricultural education?—I suppose the Treasury is the final source. What I feel is this, that wherever there have been two authorities controlling education there have been difficulties. That has been the case both in Italy and in France, and we cannot expect the Treasury—I am speaking entirely as an outside man simply wanting to see the utmost grant—I cannot see how the Treasury can be induced to give a large grant unless there is a consecutive and complete scheme of agricultural education formulated and submitted to it, and one that it can be satisfied will work well and smoothly in the country.

14265. Do you not think these ideas of complete schemes are very often difficult to realise?—Undoubtedly. I think any scheme is very difficult to realise. It takes a very great deal of working out. But still in France they set to work about 30 years ago, when the agricultural depression began to be felt, and asked themselves the question, "How are we going to meet this agricultural depression? How are we going to meet the increased competition from the new countries where the cost of production is very cheap?" The answer was: "By increasing the production per acre." Then they asked themselves: "How are we going to increase the production per acre?" and the answer was: "By teaching the people better methods, by instituting co-operation, and by giving every agricultural facility." It was about 30 years ago, I think, that they began their definite agricultural scheme; it would be about 1870 or 1875.

14266. Of course you realise that the Treasury draws its resources from the pockets of the people, so that any increased grant to agriculture would mean probably an increase of taxation?—Yes, but I would not like to use the word "increase" generally to agriculture. I should say an increased grant to education. I think that the right way of looking upon money spent in really sound education is not so much in the light of an annual expenditure, but in the light of the best possible investment to which public money can be put, if we can secure a sound scheme and not one that is overlapping; it is pathetic at the present minute to see how much overlapping there is, and to realise how little we are getting for agricultural education in proportion to the whole amount expended.

14267. When you say "overlapping," to what do you particularly refer?—I have not studied the question of grants very much, but I am aware of certain cases where grants have overlapped, and there have also been certain grants to institutions that perhaps are not doing to the full what they might for the purely agricultural students. I think perhaps my fellow witness from the Association may be able to deal more with the question of grants, because I have not studied that Blue Book. I have just glanced through it.

14268. You say here: "There seem to be three main suggestions for improving the control of agricultural education." Will you tell us what they are?—I have set them out here under three heads. The first is, "That the Board of Education should have complete control of the agricultural education as part and parcel of the general scheme of education in rural districts." Secondly, "That the Board of Education should have complete control over all work done in the elementary and secondary schools, and the Board of Agriculture entirely responsible for the higher education (farm schools, colleges, and research stations)." And thirdly, "That the Board of Education should be the authority on the pedagogic side of education, and the Board of Agriculture take over the technical instruction or any instruction having a direct bearing on agriculture." My view is that some sort of scheme must be worked out and arranged before we could hope that the

Treasury would really take up the question of giving largely increased grants for agriculture. I speak entirely as an outsider, and as only wishing to see a complete control whatever Board has it. I do not really mind as long as it is a complete and satisfactory control of the agricultural side of education. First, I should like to see a complete scheme, a consecutive scheme, of agricultural education, and I would like to see that scheme carried out under suitable control. Talking to different people in the last few months I have heard these three different suggestions in regard to that same control of agricultural education. I jotted them down here, and that really is as far as I can go with regard to it.

14269. I am afraid I must point out to you that even under your three headings you deal with the two Boards?—Quite.

14270. You do not leave it entirely in the hands of one?—As long as a really well-working plan can be arranged, that would quite meet the case, and secure more money for agricultural education; that is the thing that I am really keen about.

14271. Some of the witnesses who have appeared before us have drawn a distinct line between the word "education" and the word "instruction," and consider that what is commonly called agricultural education is more or less in the nature of instruction, sometimes of a very simple character, but going on to the very highest forms of scientific instruction, and that the Board of Agriculture, as being the Board closely associated and identified with that, and having full and complete knowledge of all the circumstances of the agricultural industry would be a more suitable authority to control such effort?—Quite.

14272. I do not know what your view on that is?—I am hardly competent to say; but taking the layman's point of view, as an agriculturist, I am not satisfied with the way in which agricultural education is being given. I do not think that there is a sufficiently developed system, and whatever Board it is developed under makes very little difference, or whether it is developed under the two Boards by a joint control, if a working scheme for such control can be devised.

14273. With regard, for instance, to demonstration plots which are carried on very largely in the country, that is a matter which still could be better dealt with by the Board of Agriculture?—I quite agree. Wherever there are demonstration plots for research purposes, then I do think emphatically that that ought to be under the Board of Agriculture.

14274. The whole staff of the Board of Agriculture must of necessity be more familiar with such a subject than the staff of the Board of Education?—I quite agree. I think that research ought to be entirely under them, and ought to be encouraged in every possible way; but, of course, when you come to nature study and to an agricultural bias being given in elementary schools, that must perforce be under the Board of Education.

14275. You have laid down very clearly, I think, that the elementary schools should provide education with an agricultural bias, but not scientific or technical instruction, and those are the subjects to which this Committee is limited?—Quite.

14276. You think scientific and technical instruction would be better appreciated if the agricultural bias were given in the elementary and secondary schools?—Quite.

14277. You have some remarks in your *précis* as to changed aims in some of the agricultural colleges. If you look at that map there, on those red spots, those are institutions supported by public money, but in addition to those there are other institutions which are purely private. I do not know whether you are referring to public institutions or to both?—I was, on the whole, referring to public institutions.

14278. I suppose you are fully acquainted with what is carried on at those institutions?—Yes; to take Cambridge, and, I hope, Oxford soon, there we get to a different type altogether, a centre that I hope will furnish the expert; and, of course, Cambridge is doing such valuable research work now that I think it is in every way entitled to as much grant as it possibly can get, perhaps more for the research than for the instruction it is giving to its pupils or students, because there again I think that comes into a very different heading. Where the pupils are landowners' or land agents' sons, or the sons of professional men I think they ought to pay fees which ought to be sufficient to support the college to which they go. The same with regard to Cirencester. I do not think Cirencester does receive a grant. I was at Cirencester myself for a year or

Mr. C.
Turnor.
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10 July, 1907.
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Mr. C.
Turnour.
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10 July, 1907.
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two, and I believe, by the way, that Cirencester was originally started with a view to dealing with farmers' sons. I think that was the case at the first start; but when I was there I do not suppose there was a farmer's son in the whole college. One sees the same tendency in a great many other institutions that have started definitely for farmers' sons, to gradually be rather taken possession of by the sons of landowners and professional men.

14279. As no public money goes to Cirencester, its circumstances cannot be complained of, at any rate, as far as public grants are concerned?—No. Of course, one can take the Midland Institute as a very typical institute, where the whole of the scholars are farmers' sons, I think, without exception.

14280. Would you take it from me that the evidence we have had from masters of these collegiate centres, those red spots, is practically identical with what you have stated with regard to one of them?—I understand that at Reading a large number of the people who have gone there are clergymen's sons who are working up for posts abroad.

14281. Quite so, but the posts they are going to take up are connected with agriculture?—Yes, but I was drawing a distinction between the pupil who is actually a farmer's son, and who is going to make his living off the land, and the pupil who is the son of a professional man or a country gentleman, who is going to become, perhaps, a land agent or to hold some Government post.

14282. I feel very strongly that this enquiry should not be limited to farmers' sons, but should apply to the whole agricultural industry, and that would include those who are going to be engaged with the land in any capacity whatever?—I quite agree as far as increasing the educational facilities goes. I should like to see all the universities with agricultural courses, but with regard to the giving of grants, when the grants are so limited as they are at present, I hold that an institution which was dealing entirely with farmers' sons ought to take precedence of institutions and colleges that were also attracting a large number of sons of people better off. Take Wye College for instance. That has a great many sons of landowners and professional men going to it. As soon as we secure increased grants, then let all the institutions have as much as possible, but I do feel that at the present minute the institutions to encourage most particularly are the ones that are actually dealing with the farmers' sons. I put it that way.

14283. What harm is done even if the richer man goes, so long as he does not exclude the poorer man who wishes to take up agriculture as a business in life?—I think that is all right, but do you not think there is a danger, when the sons of the rich people come, of their gradually crowding out the farmers' sons, and the whole scale of living at the college going up?

14284. That we have not had any evidence of?—I only make the suggestion.

14285. (*By Professor Middleton.*) It is the institutions that are doing most for agriculture that want help, you think?—Yes.

14286. It does not necessarily follow that that institution is an institution which is educating the farmer's son?—Exactly.

14287. Your opinion is that the institution that is doing the most for agriculture should receive the greatest aid?—Exactly.

14288. (*By Mr. Latham.*) What is to prevent them going off the land after they have had this education?—Although the actual handling of land is a very harrassing occupation, still it is a most interesting one.

14289. I do not see why we should have these facilities offered to us unless we are going to return to the occupation you have so much at heart?—Yes, but do you not think in most cases they would return?

14290. No, I do not.—My experience in Lincolnshire is that they do return to the land when the opportunity is given. The farms are generally taken on by the sons of former tenants.

14291. (*By Mr. Medd.*) Would you not agree to this: that scholarships should be limited only to those whose parents are below a certain income?—Yes.

14292. (*By Lord Barnard.*) That is a matter within the discretion of the County Council or the governing body which gives the scholarship?—Quite.

14293. Are you a member of the Governing Body of the Midland Institute?—No, I am not. I have been over it several times.

14294. Have any of your tenants been there?—Several.

14295. Do you converse with them about the instruction they have received there?—Yes, and they are certainly very keen about it.

14296. You think the results are good and that the farming has improved?—Certainly, and they certainly appreciate the course.

14297. Do more go there now than used to go?—I can hardly say, and I do not know of any one from my immediate neighbourhood at the Midland Institute at this minute.

14298. What is the opinion of farmers generally on the subject of such institutions?—In Lincolnshire they have made a very clear pronouncement indeed that what the farmer wants now (and that is from the majority of the farmers that I have talked to) is to keep up their practical skill to the utmost, and to receive such benefits as can be conferred by institutes in the way of definite scientific advice. Even the farmers who use artificial manures do not use them scientifically, often buying ready-mixed manures of inferior quality.

14299. Practically wasting money?—Practically wasting money, and the same with the cakes. Societies are doing a great deal to counteract that. Associations of farmers have combined and have had these cakes and artificials analysed, and they have done a great deal to check the use of inferior material by farmers, but the fact remains that there is still great room for improvement. In my part of Lincolnshire where there are very large farmers they are very intelligent indeed; there are a great many who are first-class farmers, whose methods could only in a very few directions be improved, yet I think many of them would admit themselves that they could learn a good deal in certain directions.

14300. Do they consult the College at all?—I have not the figures, but I think to a certain extent they do. Of course at Wye College they are consulted very largely indeed, but I have not any figures for the Midland Institute.

14301. Do farmers in the county consult the lecturer, and ask for advice?—My own expert (Mr. Murray) was for five years a lecturer at the Midland Institute, and he carried on experiments in all sorts of grains, barley and wheat and so on, all through my neighbourhood, and a good many farmers have consulted him.

14302. I think you will agree that the shyness of farmers with regard to seeking for information is gradually being broken down?—Yes; but there is a great deal of difficulty. Take the case of an expert at a college. He goes to a certain farm, perhaps being farmed by a very advanced and intelligent man, and he carries out experiments on that farm that may have quite striking results, but even the next door farmer will not know about that. The farmer himself will not talk about them, and the farmer next door would think it would be rather prying or inquisitive if he were to come round and see what was being done, and the consequence is that I know of cases where remarkable results in barley have been achieved in Lincolnshire which have been treated by Mr. Murray for four years running, and not one single farmer came to inquire or displayed any interest in what was going on. That is one of my points in favour of having a definite profit and loss demonstration farm run by the different colleges.

14303. I must say you somewhat surprise me. I was under the impression that the information obtained by one farmer spread amongst his friends and neighbours very, quickly?—I am only speaking from what I have observed myself in Lincolnshire, and that is what I have found there.

14304. I thought farmers, particularly, had many opportunities of meeting together and discussing these things on market days and at their clubs and so forth?—Yes, but when it is a question of going into the relative merits of artificials, for example, a farmer does not care to enter into details. A farmer might say: "I have bought soot at 30s. a ton; it is grand stuff," but he would not go into the question as to which was the most profitable—soot at 30s. a ton or nitrate at £11 10s.

14305. Does not the Midland Institute publish the results of the experiments that are carried out?—They do, and I have had them all.

14306. Cannot you get those reports into the hands of the farmers?—They undoubtedly do get into the hands of a good many, and I am glad to say an increasingly large number, but still I think that the very form of those publications is often rather puzzling to a farmer, and if he could be taken over a demonstration farm where he could see a field of wheat or a field of barley that was obviously a heavier crop than he had seen on that field

for the last 20 years, and had the figures explained to him, he would take that in and understand and remember it much more than he would a whole pamphlet of five or six pages of figures.

14307. The results of those experiments are not explained in sufficiently simple language, you think?—I would agree with that in many cases.

14308. Perhaps you will agree with my opinion that I expressed several years ago that the means by which the conclusions were arrived at were expressed at too great length and not merely the simple result given?—Exactly. What we want really is a simple business statement of the results.

14309. A scientific man requires to know all the details but a practical man only wants to know the actual result?—Yes. The practical man has not got the time; the daily round of work leaves little time for reading.

14310. You raise a very important question here. You have some very strong opinions as to the necessity of profit and loss farms as distinct from the ordinary experimental college farm, a scheme which you say would be a practical demonstration on commercial lines of the new methods of farming. Perhaps you will explain that?—I believe Bangor has got more nearly to that type of farm than any other institution. At present, if a farmer goes over the farm attached to an institution or college, he sees all sorts of experiments being carried out, often very costly experiments, with the result that the farm cannot be made to pay.

14311. You do not need to go into that. We have had lots of evidence on that point, and we can understand that an experimental farm cannot be made to pay. We want your suggestion as to a profit and loss farm?—My suggestion with regard to that is simply this: that a farm should be taken, obtaining the money from some source, and that a first-class manager or foreman, preferably one who had been through—as well as having practical knowledge—a course of agriculture at some college or institute, should be placed in charge, and be responsible to the head of the college for the farm; that the head of the college should lay down the general principles on which it was to be farmed. The heads of colleges have a tremendous lot of hard work to get through as it is, and have not time to give to the details of farm work. The farm should embody and work into a complete system of cropping any particularly excellent methods employed by the best farmers of the locality. One good farmer often specialises in one thing, another in another. Further, it should give a practical demonstration on a commercial scale of the facts discovered at Cambridge and Rothamsted. The farm might be anything up to 400 acres in size.

14312. Would not that scheme be a very costly one?—I do not think so if it was run on business lines. Of course, there would be the capital to raise in the first case, but I see no reason why we should not make such a farm pay as well as any other farm.

14313. (By Mr. Latham.) I suppose your experience is that nearly all model farms do not pay?—It depends upon what you mean by a model farm.

14314. An experimental farm?—I hate experiment. I would not have an experiment on the farm. Take, for instance, what is definitely known now about leguminous crops, and what they will do—especially lucerne—in the way of improving the soil. Those are the points I would take up.

14315. (By Mr. Lamont.) You are differentiating between a profit and loss farm and an experimental farm?—Exactly. I have a very strong opinion as to the practicability of it. I feel that a demonstration farm on modern methods showing the revised cropping, because it would come to a question of revised cropping, would be a success. You see men throughout the country who have given up the four year rotation. That did very well up to a certain period; it undoubtedly made English agriculture what it was 40 years ago, and led up to the zenith, but now many new discoveries have been made, and, for myself, I would like to see careful accounts and records kept of a demonstration farm, half under leguminous crops and the other half under wheat and barley. For instance, I would call Mr. Prout's farm very emphatically a demonstration farm, and I would like to see more of such demonstration farms. That is a very interesting case. I do not know whether you have seen the figures of that farm. I think there should be more like it. Mr. Prout's farm gives us no data about feeding cattle, and I would like to see a demonstration farm issuing a monthly bulletin giving the full value per unit of the different food stuffs in the market, because the market varies. As an instance

of that I may tell you that the other day I found I was paying 1s. 6d. per unit for concentrated food which I could have bought just as well at 11½d., and when feeding hundreds of beasts that makes a very serious difference, but it is a thing that very few farmers pay much attention to. Then with regard to the question of fattening, whether stall or yard feeding, in summer, the grass this summer is very poor, and I have been feeding, steadily, two-year old bullocks, and they have been coming on wonderfully off lucerne, keeping at the rate of, on my poorest field of lucerne, four beasts to the acre. If that goes on I need not point out what a very important thing that will be for that district. My daily cost of feeding those beasts comes out at 5½d. Counting the cost of the first two years' production it works out at 4s. a ton the second year. The next year the lucerne will be free of cost except the cost of sowing and cutting and leading into the yards, which comes out at a penny per day, and, in addition to that, I am feeding them with 3 lbs. of barley and 3 lbs. of chaff. I weigh the beasts at the commencement and at the end of the course, and I shall know by September exactly how much it has cost. We want a great deal more of that kind of data, and the authorities ought to aid in that movement much more, and I maintain that that work ought to be done by State or locally aided demonstration farms.

14316. (By Lord Barnard.) Would you suggest that the farm should be found by the local authority or by the State?—That I really have not gone into—as long as it is a farm run by public money.

14317. Certain experiments of that kind have been carried on by the Newcastle College, and, I should think, probably elsewhere, not only with cattle but with sheep at the County Council Farm in Northumberland, and in dairy cattle at the Offerton Farm?—Yes; but still it is very difficult to get clearly from the results of those experiments in a form that an ordinary layman can understand.

14318. That farm does not belong to the county. It is managed by a very intelligent Scotchman, Mr. Maclaren, who carries on a large dairying business, and he has consented to allow the local authorities to weigh and measure and take a record of the feeding, and so on?—That is exactly what I should like to see established.

14319. That is done without purchasing a farm at all and at very little cost. Do you not think it would be possible to carry it out in that way?—Yes, but my object of a demonstration farm was really to secure an all-round demonstration. One man may be growing barley very well and others specialising with other crops. There is one man in Lincolnshire who is following a seven year routine. He is a successful farmer, and by adopting that course he has done very well, but nobody else has followed it for the reason that there has been no record of it, and if what he has discovered within the last 15 years could be embodied in a demonstration farm and a careful record kept and information as to the question of feeding stock in general you would have a complete demonstration, and I would like to see complete demonstrations in every part of England, varied to suit the locality.

14320. I should have thought it would have been too costly and too risky to be undertaken solely at the public expense, but you do not think so?—I do not. Of course, the whole thing will depend on the management.

14321. Supposing some financial assistance were given for that kind of work, do you not think that it could be much better carried out by a gentleman, like yourself, who might be willing to utilise your land for the purpose instead of a county having to acquire a farm at the public expense?—Yes. I think if that could be worked it might be one of the best ways of doing it, only I should like to see it worked as a complete demonstration.

14322. You say in your *précis*, "I have also heard many of the more progressive farmers say in regard to the experimental work that they were interested, but they could not think of trying to follow up and avail themselves of results arrived at on a bit of ground the size of a hearth-rug"?—Yes. That is one more point in favour of the demonstration farm. I have had many of my farmers say, "If you can show us on your own land that lucerne and these leguminous crops do what you say they will do that is one thing; we have read about things that are being done, and also about what is being done at Rothamsted, and we will follow a demonstration if it is a commercial success, but it is our business to pay our rent and we cannot risk anything in experimenting," and I should be very sorry if I found farmers all round embarking in what I call experiments, but when you can show them, by putting

Mr. C.
Turnor.

10 July, 1907.

Mr. C.
Turnor.
—
10 July, 1907.
—

before them a concrete case in certain districts where the grass, for example, is very bad and the field is worth very little indeed, and you can say to them: "visit a demonstration farm and you can see what sainfoin has done on this land which at one time was not worth 2s. an acre," the farmers are willing to follow your example. That was done in one case that I can speak to. The sainfoin was put down on that poor land and the following year they got £5 an acre for the hay, and there was a heavy aftermath which carried more sheep than the field had previously carried throughout the course of the whole year.

14323. Is it not a fact that farmers do experiment, particularly at the present day?—I think there is a greater tendency on the part of farmers to experiment. I think they are showing a very greatly increased interest in it, but the difficulty is this; Is a farmer competent to arrive at a right conclusion? Am I competent myself to arrive at a right conclusion, even with the amount of chemistry that I have studied? I feel that one wants definite guidance before one can arrive at correct conclusions; and even to take the case of where a crop has failed it wants very careful consideration and more time than any ordinary farmer can give to it to ascribe the failure to the right causes.

14324. Your object is to encourage farmers to try new methods?—Yes, and further I say that now a man is not really a practical man unless he is using new methods and all that science can do for him to the full.

14325. You have given us in your *précis* an account of what you saw at Perugia?—Yes; and to sum it up briefly, they have a demonstration farm there very much on the lines that I would like to see established in this country, only they go a degree further there than I hardly think is necessary here. I believe they were given an estate. They have a demonstration estate showing the best methods from a landlord's point of view of dealing with it. I think perhaps that is more necessary in Italy than it is here because the estates are more run by land agents there, and they are different type of men from ours. The demonstration farm on the estate pays the best, and shows how the utmost produce per acre can be obtained. The produce per acre off the demonstration farm is decidedly in excess of the produce per acre off any of the other farms on the estate.

14326. Is this a State institution or a voluntary institution?—It combines the qualities of both. It is State aided as far as research goes. I may say that the Principal spoke nothing but Italian and my Italian is not very good, so that there were one or two details that I did not quite arrive at, but I understood him to say that it was State aided as far as research went, and also for the Perugia section it was State aided, but for the estate department four or five miles away from Perugia it was not State aided. If you go ordinarily over the Perugia Institute you simply see the College buildings and the experimental farm immediately below, just like our experimental farm at Kingston.

14327. I think you have gone through all the points with regard to which you have given us a note, and briefly to sum it up you wish to impress upon the Committee that the agricultural industry might be more largely benefited, and that it is essential that the agricultural industry should receive largely increased grants for giving instruction of various kinds?—Quite.

14328. I do not know that you desire to go through those grants?—Just as you wish.

14329. The members of the Committee will bring them out in their questions to you?—Yes.

14330. (By Mr. Acland.) I should like to know if you think that in view of the necessity of a considerable increase of money to be devoted to agricultural education it would be sufficient to go on the principle of giving State money to meet local money or whether you think that there is such a strain on local money at present that even a generous offer of State aid to meet rate aid would not produce any great development of things in general?—What I feel about that is that State aid going to increase the local authorities' grant ought to be sufficient if it could be supplemented by a grant for the training of teachers. I think that the training of teachers ought to come definitely and distinctly and entirely from the Imperial Exchequer. That is national work, and of course naturally has a direct bearing upon agricultural education too, and if teachers were properly trained, and had agricultural instruction given in their training that would relieve the local rates of a very considerable amount of expense, and I think if that was done that local authorities could meet the remaining items of expenditure. At all events, for the

present if one could double the amount coming from the "whisky money" and get two or three times the grant we get now in each locality it would certainly meet the needs of the case as we at present find them; but the demand for agricultural education would go up a great deal more in consequence of a bias being given in elementary and secondary schools.

14331. Do I understand your point is that you might still leave a certain amount of the aid of agricultural education to local rates, but in order to do that with any possibility of success you ought to relieve the rates of one of their present heavy burdens in educating the teachers?—Precisely.

14332. I understand that you are rather of opinion that in the present stage of development of agricultural education there is a possibility of wasting money on lectures?—Yes, I do feel that, and courses perhaps even in schools that result in a waste of time from the previous general education that has been given to these pupils not having fitted them for the instruction. There is a great waste of time there because their minds have not been turned in the right direction at an earlier age.

14333. Do you complain of the lack of quantity or the lack of quality of the secondary education of farmers' sons?—I think it is certainly a question of lack of quality.

14334. So far as your experience goes is the neighbourhood which you know adequately supplied with secondary schools?—That I am hardly competent to give evidence upon. I really have not gone into that, but as my personal opinion, without having gone into it, I think there are sufficient.

14335. Is it the habit of farmers as you know them to send their sons to fairly good secondary schools?—I do not think it is at present at all, particularly where there is a good elementary school and perhaps quite private continuation courses held by the teacher. In that case farmers do not send their sons beyond that elementary school.

14336. Do you think that is due rather to lack of appreciation of what exists than to lack of supply?—I think very largely so. In many districts they feel that the education to be derived by sending them on to a secondary school is not sufficiently practical, and not worth the time that is going to be spent upon it. I quite share the feeling that most farmers have, that if anything there is too much education now, only I qualify that by saying too much of a wrong sort, too little of a right sort.

14337. You can conceive secondary schools being established in local districts which would attract pupils who do not now go to secondary schools of any sort?—Yes, I can perfectly imagine that.

14338. Is your point with regard to these demonstration farms this: that before new methods are adopted by farmers it is necessary that they should have seen them in two stages; first in the stage of experiment, and secondly in the stage of practical demonstration on the paying basis of an ordinary farm?—Practically, though I do not hold that it is necessary for them to see it in the experimental stages at all. Certainly they might like to see it in the experimental stage, but I really attach importance to the demonstration stage. In Perugia they find that it is the demonstration farm that excites the greatest interest amongst the farmers.

14339. It was suggested that the same result might be obtained by collecting the information and making calculations on existing ordinary farms as by having special farms under the authorities concerned. Do you not think there might be this difficulty in that scheme, that farmers are not willing generally that their methods and the cost of their methods should become public property?—I think that would be a very great difficulty indeed.

14340. But you do strongly hold that where all attempts to work in with an existing farm were not available, it would be a good expenditure of money for a county to acquire a demonstration farm?—I do consider that to be the case, though of course one would have to be so much guided by individual circumstances, and naturally if it was a case of doing it out of public money it would have to be done in the least speculative way possible, and if there were farms in the neighbourhood capable of becoming demonstration farms, and if there were landlords or farmers who were willing to lend their farms, and you can find such in various districts, then I think one ought to take advantage of such conditions.

14341. Do you believe there has been in the districts that you know such an increase of knowledge and experience of better methods of farming that demonstration farms of

Mr. O.
Turnor.
—
10 July, 1907.
—

that kind would really teach a great deal which it is not at present the custom for farmers in that district to adopt?—I believe that to be the case. I think that the attitude of mind on the part of the farmers has changed a great deal in the last few years, and I do think that their attitude towards scientific work and the necessity of the employment of the most up-to-date methods has changed very considerably within the last ten years.

14342. (*By Mr. Lamont.*) You mean that their attitude has changed in the direction of showing a greater desire for education and for improvement of method?—Precisely.

14343. Can you tell me from your experience in Belgium and Italy, the two countries to which you specially referred, whether you found a greater desire for education among the rural classes in those countries?—No. I could not say that at all, but I was hardly in a position to judge. There is a small group of keen landowners who were most progressive; in one case English instructors had been brought out to give nature study demonstrations.

14344. You think in this country the desire among farmers for further education would be fostered if it could be brought home to the farmers that such education was really of a more valuable and effective character?—Most certainly I believe that.

14345. And particularly if an agricultural bias were given in elementary schools?—Yes. That point was discussed at a Committee of the Lincolnshire Farmers' Union, and they came to the conclusion that I have arrived at and given to you.

14346. I dare say you remember a passage in a very clever book called "Mrs. Curgenwen of Curgenwen," that came out some time ago: to a lady having a conversation with the pig-boy on her farm, and asking what he intended to do in after life, he replied: "I have passed the seventh standard, and I intend to be a clerk in the Bank of England at £50 a year." Do you think that our system of elementary education tends to make all our pig-boys wish to become clerks in the Bank of England?—I think so decidedly—and very bad clerks too.

14347. Can you tell me whether the secondary schools in Belgium and Italy in rural districts are definitely divided into two classes, high schools for general education and agricultural secondary schools?—I am afraid I cannot tell you that; not knowing the language very well I missed a great many of the details. At the institute in Perugia I saw the course of nature study and the school gardens, and certain elementary schools, but the secondary schools I did not visit. I believe that is more the case in France.

14348. Yes, and in Denmark?—Yes, but about Italy I could not say.

14349. Your evidence rather led me to think you would agree with the adoption in this country of the Danish system in this matter, that in the ordinary secondary schools in rural districts a very distinct rural bias should be given instead of an urban bias, and that the history of land tenure of this and other countries should definitely be taught, even although there is no intention of the school being considered a practical agricultural school?—Absolutely. I quite agree.

14350. With regard to the lectures, you think that these at present are premature, shall I say, until a better system of elementary and secondary education has made the classes for which they are intended more receptive to the subject of the lectures?—Yes. I think it was beginning entirely at the wrong end, and that they are trying to begin at the top and work down without having a proper foundation and giving a proper bias in the first instance.

14351. That is entirely borne out by my own experience in Scotland?—Yes.

14352. (*By Professor Middleton.*) You refer in your *précis* to the sum of £150,000 being available in this country for agriculture?—I believe that is the total sum spent, including the amount spent locally on education definitely beneficial to agriculture.

14353. I think you will find that that is 50 per cent. too much?—I forget where I got that figure from. It is not as much as is spent in Ireland, I think.

14354. It weakens your argument to overstate the amount, and I wanted to ascertain where you got the figure from, because it is not correct as a matter of fact. —I really cannot remember at this minute where I got that figure from. I did not refer to the Blue Book as much as I ought to have done.

14355. The figure is roughly about £100,000. You have

been looking into the cost of education; are you satisfied with the return we have got for the sum that has been expended?—I do not think on the whole that I am, because I feel if that amount were directed primarily to the elementary and secondary side, without curtailing higher education we would do better even if for the moment the amount spent on lectures, continuation classes, &c., were reduced.

14356. You know, of course, that a very large proportion of this sum, about £84,000, is spent by the County Councils?—Yes.

14357. I think you represent the County Councils Association?—I do.

14358. I was wondering whether your Association are satisfied with the results of the County Council expenditure?—I think we take rather the attitude with regard to that that the Lincolnshire farmers take in their expressions of opinion by the Committee of the Farmers' Union, that there was not a sufficient bias towards agriculture in the elementary and secondary education, and that we would rather see that developed in the first case than the spending of an increased sum on lectures and continuation classes, or even developing the higher education, except in so far as it affects the increased holiday courses given to teachers. That we felt to be one of the points of most importance, to try and increase the number of teachers receiving direct agricultural instruction.

14359. I gather the Association is not quite satisfied with what has been done by the County Councils?—Certainly not. Taking the case as a whole, we feel that agricultural instruction ought to be developed much further than it has been.

14360. With regard to the demonstration farm that you have suggested for carrying out what you call commercial demonstrations, you admit, of course, that if you have a commercial end in view you must have the undertaking on a commercial scale?—Quite.

14361. This would mean that for even a single experiment you would probably require a very large farm?—You would.

14362. And therefore, even if we had established in a particular county a farm such as you indicate, it would not be able to deal with a very wide range of work?—It would deal with the average work of the locality. It would set up a standard that would be suitable for that locality, and I think it might very beneficially include two types of holdings—one for the large holder, and in view of the probable increase of small holdings, a demonstration small holding, which I believe is in the mind of the Board of Agriculture, and which I think is a very important thing.

14363. I am thinking more of the large holding, and I agree with you that it would be necessary, if it is to be a commercial success, to adapt it to a particular area, and the question is how large would that area be?—Yes.

14364. That, of course, introduces a difficulty?—It does. Of course, at first they would have to be much fewer than one would like to see; we could probably only begin with perhaps 10 throughout England.

14365. Would you not agree that weighing the relative advantages and disadvantages of demonstration farms, and of experiments conducted as the Chairman suggested on private estates, that it might be better perhaps to see what we could do on the private estates first?—I quite agree. I think both methods could be employed with advantage, where you could have complete demonstrations under a college it would be best, but on the other hand, there would be nothing against having as complete a demonstration as possible on any farm that could be put at the disposal of the agricultural college. I think it might work very well, but of course the question of capital would have to come in in any case.

14366. The object after all is to get the farmer to imitate you?—Quite.

14367. My feeling would be that the farmer might say even if he saw the thing carried out on a demonstration farm and saw it was a commercial success, he would argue that his position was different, that he could not afford to run any risks, and that as he would still have to experiment to a considerable extent, he would not alter his present methods at all?—Yes, but I think if you could show a farmer that by ploughing up bad grass and sowing lucerne (giving him full information as to the best methods of treatment) he would increase the yield of foodstuff manifold and also improve the condition of the land that he would follow suit.

Mr. C.
Turnor.
—
10 July, 1907.
—

14368. In that particular case probably he would?—I look upon the development of lucerne growing in England as a very important feature, but it is only one of the fodder crops, and I would like to see much more attention paid to fodder crops.

14369. Do you not think that experiments even if they are not on what one might call a commercial scale do give to the farmer hints which he very often carries out in practice, and makes a commercial success?—Some may take advantage of the results of experiments, but the great thing is to create tradition now, and undoubtedly experimental farms, as pure experiments, help to create tradition, with the more intelligent class of farmer, but I think the demonstration farm would do most good with the general average.

14370. My experience in connection with these demonstration plots is that I have frequently had people coming to me for hints as to what they might do in practice, and apparently they were quite prepared to accept the hints and to try whether they could, working under their own conditions make a commercial success?—Certainly there are such cases, but the question is what proportion of farmers would do that?

14371. I feel that probably about the same proportion would take the hint in the one case as in the other?—The only thing is do you not think that with the demonstration farm if you show you are making a clear profit of so much per acre, and that by treating crops in a certain way there is a larger margin of profit, it would be a much stronger hammer when done on the scale of a farm rather than on a plot.

14372. (By Mr. Latham.) I think you said you were farming something like 3,000 acres of land?—Yes.

14373. Naturally, we may take it, it is your own?—Yes.

14374. You have spoken with a good deal of feeling about the excellent way this foreign work was carried on. Have you thought it worth while to employ any foreigners to assist you in your occupation?—I had two ideas at one time, one was to employ a German expert, but I found that one could get an Englishman, or rather, he was a Scotchman, who was quite up to the standard of any German; and secondly for my demonstration of a small holding, I originally intended to bring over a Dane, but again I found a very intelligent labourer from the small holding district of Lincolnshire who is very much interested in the question as a problem. I have watched a good deal what they do abroad and I do not think it does to slavishly follow foreign precedent. What we want to do is to consider the question as a problem and see what we can work out on our own lines suitable for our own country.

14375. What I rather wanted to gather from you was this, whether you had seen such improved systems abroad that you would be conferring a benefit on society at large by bringing some of these men over and teaching us to farm in England like they farm abroad?—No, I would not go so far as that. I maintain that it is more for the general average farmer in this country. There are lots of very good farmers indeed, and lots of my own men have farms that are perfect models of what a farm ought to be. Those men are always ready to pick up any wrinkle coming from any source whatever, but I still think that in the large districts where we are sticking to our four year rotation, and in districts where turnips do not grow freely, that we could, with great advantage, substitute fodder crops for much of the root crop that is grown now, and also in other districts where they look to grass as a chief source of food for their cattle, I think reading the lesson taught by foreign cultivation that if we gave up our trust in grass very largely, and increased our belief in arable land for producing fodder crops, that we might do so with very great benefit. I think there is great misapprehension in England as to what crops do pay and as to what crops do not pay, and there are districts that I know where they think wheat cannot pay at all in spite of some very clear examples of wheat paying a very good margin of profit over the cost of cultivation.

14376. You have made a very strong appeal for State aid in your evidence here this morning, but being an agriculturist myself I almost feel that we should not be shown to be so dependent on State aid as you have suggested. Do you not think it is possible for us, as agriculturists, to carry out a great many of these experiments for ourselves?—I quite agree. I think we must do a great deal for ourselves; I want to see as much done as possible, but the principle of *laissez-faire, laissez-aller*, which did very well in the past, leaving everything to private enterprise

no longer answers in the twentieth century with its complicated civilisation. A considerable amount of State assistance on sound lines is necessary; there is a large amount of needful work which is either not being done by private individuals or not being done on a large enough scale. If we are to get agricultural education into the condition that we would all like to see it in, I think we will definitely have to receive much more consideration and aid from the State.

14377. Much as I should like to see great assistance to agriculture, I am so afraid that our large farming interest will feel rather sat upon by being shown that we so entirely depend on State aid for our business?—I do not think so more than in any other industry. Other industries are aided by very complete systems of technical education and have their technical schools that have very great bearing on the industries of particular districts. At Swindon, for example, you will see a great State-aided institution in which the boys going off to the Great Western Railway works can go through a special course of instruction bearing upon that industry, and my contention is that agriculture should have the same amount of State-aided instruction as is provided for other industries, and that local authorities should give a fair proportion of the money that is available for technical education to education that I shall call technical agricultural education.

14378. If you wish to alter the teaching in the elementary and secondary schools, are you willing to alter the Code?—I think the Code has been altering very considerably of late. The whole spirit is changing and the introduction written by Mr. Morant some three or four years ago, showed a very different spirit to anything that had appeared in the Code before—trying to show the aims and objects of education in general.

14379. That is not what I meant. Do you mean you would like it to be changed in the way of supplying more agricultural teaching?—Certainly, and that is what is being done in many schools to-day. It can be done under the existing Code perfectly easily; it is merely a question for the local authorities. I do not know whether you have seen the suggestions sent out by the Rural Educational Sub-Committee of the County Councils Association. Everything we recommend there can be carried out under the existing Code where the conditions are favourable.

14380. But the unfortunate thing is in regard to that, that the teachers are not competent to teach it?—That is so in a great many cases and one must only put in force such teaching where the teachers are capable, but we are trusting each year to having an increasing number of teachers who will be capable of giving that instruction, and to that end we are endeavouring to increase the number of teachers attending the holiday classes at the agricultural institutes and college.

14381. Are you in favour of the teaching in rural districts being quite different from what it is in urban districts?—That is a very big question. One can point to various urban schools where nature study is being taught to the very great advantage of the pupils, but I am primarily concerned myself with rural districts and, therefore, I say that we must have a rural bias to the education in rural districts. I am emphatic about that, as long as the bias will not be doing injustice to any of the pupils there who may want to go into town life afterwards.

14382. If you had that you would want two distinct sets of teachers, would you not?—I do not quite agree there. As I said in reply to Mr. Acland's question, I would like to see an extra course in the regular training of the teachers. In the training of teachers at the present minute in England, it is only in the third year that the standard approaches the present standard in Germany and France, and I would like to see incorporated in the third year's course a certain amount of agriculture that might enable them to teach nature study. In cases where they were not competent to teach nature study, we must develop the system of peripatetic teachers.

14383. With regard to the secondary schools, I think you spoke of agricultural sides being added to them. Do you think that that would be beneficial?—I do, most certainly in schools to which the sons of agriculturists go, because I maintain, having gone through a certain amount of scientific work myself, that it is the directly practical side that has stayed with me and has been of the most value. What is the good of learning abstract chemistry? I forget the book I read a lot, but there were 1,400 pages, and when I went in for the Royal Agricultural Society's examination, I knew enough of chemistry to set

Mr. C.
Turnor.

10 July, 1907.

up as a chemist, but it has done me little good, and a 300 or a 400 page book on agricultural chemistry, chemistry as applied directly to agriculture, would stay with one and enable one to understand the processes going on in a way that pure chemistry does not do. That raises the question of how much general chemistry ought to be taught. My view is that very little is necessary and that agricultural chemistry is all that is required.

14384. You would not class yourself as a farmer's son?—I have never attended a secondary school or a grammar school, but I do maintain that a very useful amount of agricultural chemistry could be taught at such a school. We do not want to turn the farmers' sons into chemists but to interest them rather in the agricultural processes that go on, and it does not take very many hundred pages or very many hours of instruction to give a certain understanding of chemistry.

14385. Would you not rather favour a general education at the secondary school and then let the lad go for two or three years on a farm and go to the college short courses after that?—I would like him to go to the farm because the practical work can only be taught on the farm, and I would like to see him go through either short courses or a year at a college, but his interest should be first roused in the secondary school.

14386. Do you not think he would find out what he wanted in the way of scientific knowledge if he had first had two or three years on the farm and then went back to the college short courses?—I quite agree with you. One ought always to have the practical work first; and then the scientific or theoretical work. You see that in France carried out hand in hand very well. You will see it carried out in the elementary schools—I do not know about the secondary—and the pupils, after their morning lesson, go out and join their parents in the fields in certain places and have their lunch with them and do practical work in the fields.

14387. (By Mr. Medd.) That is not universal?—In certain districts it is done.

14388. Yes; but I think you may practically say that half-time schools in that sense have been discontinued during the last two years?—Yes, but it is still done in certain districts.

14389. (By Mr. Latham.) If a lad goes home for two or three years and gets a little information of the practical work, he can then go back to college and find out what is absolutely necessary for him to learn in the way of scientific knowledge and not that he should receive this high-class education which would make him unfit for being a farmer afterwards probably?—I am always against what is called a high-class education. I want it absolutely directed towards the one aim and object—to develop the intelligence as quickly as possible, to have it concrete rather than abstract, to have it from the hand to the eye and to the brain with the final objective to make the boy think for himself and to think correctly. I am of opinion that it is necessary to give that bias in the elementary schools first, otherwise you will find if the boys have simply been through a dead rote of text books—you see it every day—the text book work simply deadens their intelligence and many of them go back on to the farms without taking any living interest in any single subject connected with agriculture.

14390. Do you find in Lincolnshire a large proportion of farmers' sons are likely to become farmers?—Yes, in my own experience they do; they go on from father to son.

14391. Is there a large proportion of young men in the several schools that are likely to go into farming?—I should say so; I really have not gone into that, but I should say so.

14392. Is this teaching likely to make more men go into farming do you think?—I hope, primarily, that this type of education will induce more labourers' sons to go in for farming. Take a school I am thinking of now that has just started school gardens; the schoolmaster has turned out 1,000 boys, some holding very good positions in different parts of the world, some doing pretty well near by, and a much larger percentage of the 1,000 would have stayed in the country if there had been the facilities. If you first rouse their interests when they are at school in agriculture, and then give them the opportunities that small holdings will give them to stay on the land, I think you will certainly get a vastly larger number of people making their living directly from the land; and increasing that class is of very great importance, because they in turn when their sons grow up will provide young men for work on the bigger

farms for a certain number of years, until when the rotation comes round they are able to go on to their father's holding, or to have another little holding of their own.

14393. You have said a good deal about lectures and you think they are almost a failure?—I would not say almost a failure, but I do think they would be much more effective if the interest was aroused in scientific work first by other means.

14394. These lectures are not all obliged to be scientific?—No, I used the word "scientific" rather loosely there, because even as practical demonstrations of methods or expatiations of modern methods, I think they would be much more effective if the boys had had, even as far as the elementary school goes, their interest aroused, and if they had been doing certain work in a school garden, and got to a certain stage, and they heard a very good lecturer was coming, they would naturally be keen about listening to the man, and they probably would make notes and really profit by it, but at the present moment they go in, and having had no previous thought on the subject of what the lecturer is going to lecture about, their minds are not in a state to benefit by the lecture, and the probability is that if they go at all they will not benefit very much.

14395. Has not the fault been with the lecturer, and not with the lectures so much?—Unfortunately it has been so, because many county councils have sent out lecturers that did infinitely more harm than good.

14396. I suppose up to the present time they have been very difficult to get?—Very.

14397. Has the number of agricultural students largely increased lately?—That I cannot tell you.

14398. Has the anxiety to become agricultural students increased?—Of course one can only speak of one's own district. I cannot even say there that I know of an increased number of cases of youths wanting to become pupils, but I can say emphatically that the farmer much more widely recognises the importance of increased agricultural education if it is on sound lines.

14399. You say in your *précis* that college students you consider make certainly the best farmers?—In the cases that I have observed that was so, but they were the sons of excellent farmers to begin with. I believe very generally they considered that they derived very direct advantage from colleges, and all that I can say is the definite fact in the neighbourhood I am thinking of is that the men who have been through that course are the best farmers in the district for promptness and business methods. I have ridden over the farms with many of them and they are a tremendous lot ahead of the average.

14400. Is that by reason of their fathers having been excellent farmers, or is it because of the scientific education they have had?—When you come down to that it is very hard to say. You must give a great deal of credit to that, and undoubtedly they were very sharp men to start with, and probably very good organisers at the same time. No amount of scientific education is going to make a farmer succeed unless he is a good organiser.

14401. With regard to the "hearthrug" experiments that you mentioned, these experiments necessarily must be on very small plots?—Yes.

14402. Is there really any very great feeling against an experiment that is carried out on a small scale?—I do not think there is any great feeling against it. My point is that the "hearthrug" plot is very useful for Rothamsted and certain other definite centres for research, which must go on in that way, and I would like to see more experiments of the "hearthrug" kind for providing data for other people to carry out on a larger scale.

14403. You think the forerunner of the commercial experiment should be the "hearthrug" experiment?—You want an intermediate demonstration between the "hearthrug" experiment and the farmer.

14404. Is not that a great waste of time?—I do not think so, because I think they are wasting their time in many districts by not availing themselves of ascertained facts. Of course there is always the up-to-date farmer who takes up a new idea or two; but if there were a demonstration farm consolidating into a complete system suited to the locality the truths discovered at research stations, I think a much larger number of average farmers would be induced to follow.

14405. My experience is that we are not so very much shut in in our occupations, and I think most of our neighbours know exactly what his neighbour is doing?—I must say my experience is rather different from that. I have been surprised myself at it, but the fact remains. I have

Mr. C.
Turnor.
—
10 July, 1907.
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given you the case of the barley experiments in Lincolnshire where the increase per acre in every case of a 21s. dressing of artificials as applied by Mr. Murray was repaid with anything up to 50, 60 or 70 per cent. increase. Those experiments went on for five years, and had no effect whatsoever upon the local farmers. In fact one very big farmer got as far as the fence and said, "I do not see that this expert from the Midlands can teach us much about barley growing," and he never once enquired what had happened. All the results are recorded in the Midland Institute, and those farmers who did follow in the same direction found very great beneficial results to themselves. In any movement like this one must actually put it before the farmers themselves.

14406. I quite agree, but in all probability was it not because they formed conclusions that it would not be beneficial to themselves?—I do not think they really formed any such conclusions. I do not think they knew about the definite results at all.

14407. You made a remark about Mr. Prout. I know him very well, and I went to see his occupation, and I followed suit immediately I went down there, and I get a great many people to come over my land and see what I am doing?—Yes, and Mr. Prout got a very great many people over his land too, but when it comes down to any definite neighbourhood you see what a small percentage have followed his example.

14408. Yes, but why should the Government take this up. I think individuals ought to?—I look upon it as completing the whole scheme of the educational course, you lead in stages right up to that and that is really a finishing touch to the whole educational scheme. If you can get individuals to take it up well and good, but I think the great difficulty about keeping records ordinarily will stop individuals doing that. I know I have been trying very hard to get data about various things from various farmers, and I have found the greatest difficulty. One Norfolk farmer only the other day sent me very interesting data of all his working accounts, but there are not so very many that can do that.

14409. I can recollect the time when such a thing as a register in a diary was almost unknown, but nearly all farmers keep registers now?—They do more generally.

14410. That is brought about by meeting one another at farmer's clubs, and on market days, and in various ways, —Undoubtedly, but my point is when you are carrying out scientific experiments, experiments involving a good deal of chemistry and chemical terms, then one farmer would find it rather hard to describe it to another farmer, and if it is done under the auspices of one of these institutes, and is put clearly before the farmers of the locality by that institute, that then the chances might be much better of its being taken up, provided that it is put clearly and simply before them.

14411. With regard to a State experimental farm, do you not think it would rather do us harm than otherwise if we were to recommend such a scheme?—I must say I cannot see that. I think you want to encourage individual effort in every possible way, but I feel at the present time that individual effort is not very active throughout the country, and if in every county you saw several of these farms that could be called demonstration farms, run privately, then I would say nothing more about it; but, unfortunately, that is not the case, and we want to show how to increase the production per acre, and how to buy and apply the artificials most economically. For instance, I mentioned the case of the farmer who had been buying soot at 30s. a ton. He is a man who gets a great deal out of his land, but the amount of nitrates contained in soot is so small that though he thought he was buying it very cheaply, as a matter of fact, he was paying 50 per cent. more for nitrate of soda in that form than he would have paid if he had bought a hundredweight and a half of pure nitrate of soda.

14412. You do not want to make farmers chemists?—No; he wants someone who can supply him with the chemical knowledge. Farmers must in the main keep to practical work, and not be chemists or analysts themselves; but do let us avail ourselves to the utmost of expert scientific advice, which I would like to see provided locally, and I contend that the demonstration farm would be of great assistance in that way, and I would like to see all the information collected being utilised by the farmers in their methods, and with regard to the buying of food stuffs and artificials, and the applying of them, and so on.

14413. (By Lord Barnard.) You will agree with one witness who came before us, who did not believe in teaching farmers at great work and trouble what could be done by

a professional man for 10s. for the farmer?—I agree with that, but what one requires is early education to develop in the farmers' sons sufficient interest in progressive agriculture to make him anxious to utilise the services of that expert.

14414. (By Mr. Latham.) I was just going to ask you that question, but Lord Barnard took the words out of my mouth. Should you be surprised to hear that we have had professional men here who deprecate that kind of thing very much indeed?—I do not quite follow. What type of professional man?

14415. There is a certain profession of analysts, we will call them, who consider that this cheap way of getting analyses made is detrimental to themselves, and it is detrimental to ourselves also?—I do not think it is detrimental to ourselves; it may be detrimental to the analyst.

14416. Is it done as well by these men at colleges who are not analysts as it would be done by an analyst?—The question of analysing butter, for example, is a very delicate operation, and there ought to be a very competent analyst for that. I employ an expert who would be quite capable of analysing, but I have not got the apparatus for analysing, and I do use, as a matter of fact, the public analysts. I very often send things to Wye to be analysed, and I do not think there need be any apprehension on that score, because I think the tendency will be for local analysts to increase in number. You see that now the different Farmers' Associations are retaining analysts more or less of their own.

14417. Your remark would apply more than ever to artificial manures?—Quite. I think everything ought to be subjected to the analyst, and it has most excellent results, and I can speak to a number of cases from my own experience.

14418. Now with regard to the cattle feeding and weighing and measuring, have you had any experience at all in that?—I have not gone to the expense of a weigh-bridge of my own. I have not got down to weighing every day or every week, but I weigh when the cattle get on to a certain type of food, and I weigh at the end of the time.

14419. Do you think that is a thing we could ask for Government aid to assist us in?—Not specifically in the weighing of cattle. I could not specifically go into details and say there should be Government aid for this and Government aid for that. I put it as part of the whole system, and that equal facilities should be given to agriculture as are given to other industries. But I think at a demonstration farm that it should be one of the most important experiments—certain food costing so much a day has put on so many pounds of flesh, because you might be feeding with one combination which costs you 3d. per day per pound gain, whereas in another combination of food stuffs they might do equally well on what was only costing you 1½d. per day.

14420. Do you know the Woburn Farm at all?—No, I have not been there.

14421. That is done by the good feeling of the Duke of Bedford?—Quite.

14422. Do you not think it would be enough for us to trust to such enterprise without going to the Government?—I do not think it is doing sufficient. That is my point: that we ought to have more of such work throughout the country.

14423. Something very similar to what you have been suggesting is carried out at Woburn at the present day?—Yes, I believe that is so. Undoubtedly Woburn is having a very beneficial effect and influence in the immediate locality but still I should like to see more of these centres. I only suggest that it should be done under Government because I see no prospect of it being done by private enterprise. After all, the number of these demonstrations now in existence in England are not, to my mind, sufficient. I am myself in a way carrying out what amounts to a demonstration farm, and I am doing it purely from the commercial point of view, on farms that we could not let before, and upon which there has been a heavy loss, land that was farmed on the best of the old accepted fashion, four-yearly rotation, and I am simply trying to devise some method by which they can be improved and made to pay.

14424. This next question I do not want you to answer if you do not wish to. Do not you think, as a landlord, when you talk about the four-course rotation, that that system has been forced on the tenants by the landlords?—Yes, I absolutely agree with you. I am in favour of freedom of cropping providing the land is used properly, and not abused. Of course, now there is the freedom of

cropping, and I have had many farmers say to me, before the last Bill was brought in, that they would have tried many new crops if they had been at liberty to do it. There is still the difficulty of valuation at the present moment, and they were afraid of trying new crops for fear of breaking the local system of cropping, and in case they had died and left their executors in a muddle.

14425. You made a remark just now that the new methods were very successful. Is not that very much on the lines I am speaking of? Certain new methods of farming have got into operation by farmers having their hands less tied?—I quite agree.

14426. Do you think that will apply all round to agriculture?—I think it will, but I think they will be immensely helped if a system of expert advice were developed all through the country. Now there is freedom of cropping, and an increased inclination on the part of the farmers to try new methods and new treatment, if they had the demonstration provided for them instead of their having to get data for themselves, it would be a great advantage.

14427. I think you were here this morning when the last witness gave his evidence?—Yes.

14428. Do you not think if we made a stronger feature of the question of research, and that sort of thing, we should have a much better chance of improvement than by going into these other details?—I quite agree, but I feel very strongly that we want the two. I would like to see many more centres of research instituted, and a great deal more money spent on research.

14429. After all, the great depression that has gone on with regard to agriculture has prevented farming being in anything like the flourishing state it ought to be?—Quite.

14430. (*By Mr. Davies.*) You have pressed upon the Committee the importance of an agricultural bias in the early stages of education. We had a witness here a few days ago who told us that in New Zealand they attempted to bring nature study into the schools there with the object of inducing, if possible, children in towns to go into the country and to take up agriculture as their life pursuit?—Yes.

14431. Would you think, if that policy was adopted in this country by the Board of Education and by the authorities, that it would produce some result of that kind?—I think it would, undoubtedly, if the facilities for getting on to the land were developed hand in hand, as they probably will be under the Small Holdings Bill.

14432. You think it would almost revolutionise, or, at any rate, do something to stem the flow off the land?—I think it would do more to stem the depopulation of the land than anything, and I think it is to the rising generation we must look rather than to the older generation. My experience is, in most cases, that there are quite a large number of men who would like small holdings at this minute if they could get them in suitable places and not in places where any man of common sense would see at once that a small holding would fail.

14433. Would you like to see it compulsory on elementary school teachers to go through a course of nature study?—I would like to see all elementary school teachers take up a course of nature study, because I consider it is a valuable way of training the brain.

14434. You would make it compulsory?—I would.

14435. You told the Committee that farmers found it very difficult to understand and reap any benefit from the periodicals and reports issued by the various colleges with regard to experiments?—Yes.

14436. Would they find any difficulty in understanding the leaflets circulated by the Board of Agriculture?—I think not, and I think in many cases the Board of Agriculture leaflets are being used more and more. In my own case I find the foremen are really quite keen on reading them, and they have no difficulty at all in understanding them, and I would like to see very many more. I believe it has been developed very much in the last few years.

14437. Do you find they actually reach the hands of the small farmer?—That I cannot tell you. Wherever I have noticed the publications in my own part of Lincolnshire they have been obtained either by myself or the agent or the expert writing to the Board for pamphlets on definite subjects, and then we have handed on the advice and literature that we have received.

14438. Have you any suggestion to make as to how the literature could be more widely distributed, through the medium of post-offices or means of that description?—I have not thought of that at all yet, but I certainly think it

ought to be more widely distributed. It might be done through the schools perhaps, but that is only a passing idea.

14439. With regard to the overlapping which exists in experiments, do you favour the idea that there should be some sort of central Committee organised for co-ordinating the results of the different experiments carried out in various parts of the country?—I quite agree with that idea.

14440. Is there any provision made for agricultural circulating libraries in your part of the country?—No.

14441. Do you think it would be a good thing if Government or the local authorities were to spend money in that direction?—I think that is certainly work that the local authority might most easily take up.

14442. Should you think students and probably short course students and farmers keen on agriculture would make use of circulating libraries of that kind?—Yes, I think they might. Of course it is very hard to say. It is difficult to get people to read in any line of life. The twentieth century is not conducive to reading very much.

14443. Except magazines?—Except magazines.

14444. (*By Mr. Medd.*) I think you had considerable experience of the Education Committee of the Royal at the Lincoln Show?—Yes.

14445. In fact you presided at one of the meetings?—Yes.

14446. There was a very large interest taken in the whole of the proceedings?—There was.

14447. You had a very large attendance of teachers?—Yes.

14448. In fact it formed one of the most prominent features of the show?—It certainly did.

14449. At present it is taken up by the Committee of which you and I happen to be members?—Yes.

14450. Perhaps you will agree with me that it would be better if in future the Education Committee of the Royal would become responsible for the whole of it?—I quite agree there. I think they ought to recognise it as one of the important parts.

14451. I have discussed it with Lord Moreton, and probably you have yourself?—Yes.

14452. With regard to the type of rural school suggested, have you ever heard there by any responsible person any suggestion of making it an agricultural school?—No.

14453. The type of school you desire for the rural districts is identical with the type of school for the urban districts?—It is, so far.

14454. The mind of the child is to be as far as possible directed to natural and physical phenomena to develop intelligence of mind and powers of observation?—Exactly.

14455. Those faculties are just as valuable to the urban child as they are to the country child?—Absolutely.

14456. Probably you will agree with me that the same principle applies in regard to secondary schools?—Yes.

14457. That the object of an agricultural bias in secondary schools as in elementary schools is to develop above all intelligence by observation?—Quite.

14458. It follows that there is no necessity to develop secondary schools of a rural type, or rather with a rural side in rural districts?—Not if the existing schools can be given a sufficiently agricultural leaning.

14459. You have not had the opportunity yet of seeing such a school?—Not yet.

14460. I shall be seeing Mr. Hobhouse in a day or two and I will ask him to invite you down?—I should much like to go.

14461. If you went down to Beckford you would see a school conducted entirely on the intellectual methods with respect to agricultural and rural interest, attended by children who ride and drive some of them eight or ten miles daily to it—a school in a remote village. That is the school we want for those who can go to a secondary school?—Quite.

14462. Have you come across any school of a higher elementary type in Lincolnshire?—No.

14463. Have you visited an *école primaire supérieure* in France?—No, I never have.

14464. You were speaking just now of those children who must become workers almost as soon as their elementary instruction is over?—Yes.

Mr. C.
Turner.

10 July, 1907.

Mr. C.
Turnor.
—
10 July, 1907.
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14465. Do not you think that we could establish central schools, I may call them, of a higher elementary type in suitable rural districts providing commercial, industrial, and agricultural instruction? They would supply the kind of education that the young farmer wants?—I think they might.

14466. You have not actually seen that type of school?—No, I have not. I hope to study them later.

14467. You feel that the money now given by the Board of Agriculture is to some extent wasted?—I do.

14468. That there might, in other words, be a wiser distribution of it. I do not know whether you would agree with me that there might be a fairer distribution of it?—Do you mean on the question of grants?

14469. Yes. You feel that the money might be distributed possibly to better advantage and with less waste?—Of course, as regards the question of actual technical distribution of grants, I really have not studied the Blue Book at all. I believe my fellow representative is going into that side of the question.

14470. This morning you spoke of different grades of institutions. Do you not think it possible that some of those red spots such as Reading and Bangor and Harper-Adams are re-duplicating each other; that there is possibly not a sufficient supply of pupils for so many schools of that particular type?—I should think at the present moment—I am only giving an off-hand opinion—that that possibly might be the case until the demand is increased by previous education.

14471. This is an idea purely of my own: Do you think it would be more to the advantage of agriculture if the Board of Agriculture were to allocate a fixed sum annually to the County Councils, subject to the submission by each county of a scheme of agricultural education in the way that the Board of Agriculture approves of and gives grants?—Yes.

14472. You are aware that the tendency of the local authorities is to detract from the "whisky money" formerly spent on agricultural education owing to the demand for the training of teachers?—Quite.

14473. If the result of our report were to cause the combined grants from the Board of Agriculture and the local authorities to exceed £100,000, and if these grants were distributed entirely by the Board to each county after the submission of their schemes, do you not consider that more overlapping could be avoided, more waste prevented and a better organisation instituted?—That is rather a hard question to answer. Really I hardly feel competent to answer that, but I feel that if a definite scheme were made and put down on paper, also a definite system of control of that agricultural education, that then overlapping could be avoided.

14474. What one is aiming at is organisation and systematization, and from each witness we have had the most satisfactory answer that he is prepared to co-operate fully with his neighbours. If we can get the Board of Agriculture as the definite centre, instead of

saying to each county, "You will have so much out of the whisky grant," and leaving it to that county to allocate so much to agriculture, it would be better, would it not, for the Board to be the centre, endowed with £100,000 a year for agricultural purposes, or more if necessary, and earmarking so much to Kent, for example, and so much to the next county, and so on?—Yes, I think that might work very well. That sounds a very good suggestion.

14475. Take all that question out of the hands of the Board of Education altogether, and do not have this constant struggle?—The local authority would be responsible for the carrying out of the purpose for which the money was allocated?

14476. Yes. Of course there is the inevitable relationship of the Board of Education to the Board of Agriculture about which you spoke?—Yes.

14477. You would prefer, I take it, that the elementary school work should remain wholly in the hands of the Board of Education?—I cannot see how it very well could be otherwise.

14478. The continuation schools which relate to agriculture should be controlled and subsidised by the Board of Agriculture?—I have only sketched out the three possible ways that I have heard put forward of arranging the control of agricultural education. Of course, in the case of Scotland, where the Board of Education has complete control, I am not at all competent to speak, because I have not studied the question. I only take the ground that I want to see as much money given to agricultural education as possible.

14479. In regard to the training of teachers do you make any provision in Lincolnshire?—We do in Lindsey, but, I am sorry to say, that Kesteven, at present, makes no provision for sending teachers to the Midland Institute, and I hope that Lindsey will send still more.

14480. (*By Lord Barnard.*) Have you land in Kesteven?—Yes.

14481. Can you tell us why they do nothing?—I think it is simply due to inertia and the question of cost. That is my solution of it. What they may think about that I do not know.

14482. (*By Mr. Medd.*) The proposition is shortly to allow trained teachers of not less than four years' standing to have a third year's training at some institution?—I have heard about that.

14483. I do not know whether you would bring that to the notice of your County Council as soon as the regulations are issued?—I will.

14484. Are you aware that there may be some difficulty if you do not give a teacher so trained some little extra salary?—Quite.

14485. He or she so trained you would feel, probably, would be competent to undertake the responsible work either as a peripatetic teacher or as a teacher in a higher grade school. At present the institutions are Swanley and Wye. At Wye there is a difficulty about residence at present, but if Wye will not take them Reading will?—Yes.

Mr. J. A. SMITH called and examined.

Mr. J. A.
Smith.
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14486. (*By Lord Barnard.*) You are Principal of the Eastern Counties Dairy Institute?—Yes, under a representative Committee.

14487. What does that Committee represent?—It represents the counties of East and West Suffolk, Norfolk, the Isle of Ely, and the Borough of Ipswich.

14488. Your Committee has representatives of all those counties?—Yes.

14489. How long have you held your present appointment?—We commenced in 1888, first of all with assistance from the Agricultural Department of the Privy Council, before the Board of Agriculture was formed.

14490. You have been there since 1888?—Yes.

14491. So that the Institute has been going on for nearly 20 years?—That is so.

14492. How are the funds for the Institute provided?—We receive a grant of £300 from the Board of Agriculture and the funds are mainly provided by the various County Councils, and there are scholarships for certain students and fees from others.

14493. Have you any resident students?—Yes, we have about 80 resident students annually at our central Institute at Ipswich, and we occupy and farm about 350 acres of land.

14494. What does your Institute consist of?—A block of buildings erected specially for the purpose of giving instruction in dairying and poultry keeping principally.

14495. To whom do the buildings belong?—To the Institute.

14496. Who purchased them, do you know?—We built them ourselves. The Institute built them.

14497. From what sources did the funds come?—They were provided by about 70 or 80 land owners in the district.

14498. It did not come out of public money?—No.

14499. The funds for purchasing the land and erecting the buildings were provided by private subscription, and the Institute is now maintained by grants from local authorities and the Government?—Yes, and the fees from some of the students.

14500. I think this report, with which you are probably

familiar, contains a pretty thorough account of the curriculum of the work which you carry on, which is, in many respects, similar to that carried on by other counties?—Yes, on very similar lines.

14501. With which you are, perhaps, familiar?—Yes.

14502. Therefore, we need not go over that, but we should like to hear any suggestions you have to make or any points to which you would like to draw our attention, in which you think your Institute is doing specially good work, or points where you think your Institute might be improved. In the first place, take the work you do. Is there anything you do which might with advantage be done elsewhere which is not done elsewhere?—As regards the subjects taught, though we have these farms and keep from 30 to 40 cows, our principal work is devoted to butter making and cheese making, and milk testing, and we have certain definite courses in poultry keeping and poultry management. Most of the students come to us by aid of scholarships from the different County Councils, and there—
14502a as I go along, if I can suggest defects in the system—it is that we should much prefer something definite as regards these scholarships. We should prefer that each of the counties would give them for the same period, and that they should give a definite number every year. As it is now there is a very great uncertainty, and each of the counties that we principally work in connection with, Norfolk and East and West Suffolk, pursue a different system in many ways, and there seems to be rather an objection to work alike. If one county adopts one system
14502b another county seems to like to adopt a different one. I think the agricultural education of the county of Norfolk appears to be the best by far in the east of England. The money they spend on agricultural education is better applied and they get better results than in any other county; there is more elasticity about their system, and the central idea is to gradually help those who are inclined to help themselves. This is their scheme. (*Handing*
14502c *document.*) I will leave a copy of that with you. Another difficulty we meet with is this. Undoubtedly, there is a very strong feeling in all of the Committees to hoard up the “whisky money,” and there is a great disinclination to spend it. That has been more marked, I think, in East and West Suffolk than it has in Norfolk.

14503. Has there been in the case of any of the three counties principally concerned any decrease of their assistance to the Institute?—No, I think not. It has varied from time to time. That has been the last year there has been rather a tendency to increase it.

14504. Is the finance entirely in your hands subject to the committee, of course?—Yes, subject to the committee. I may tell you that ours is very up-hill work indeed. We want funds very badly.

14505. You keep books and so on?—Yes.

14506. Who draw the cheques?—The committee draw the cheques.

14507. You go to the committee with requisitions for the cheques?—Yes.

14508. What is the staff?—The resident staff is two teachers regularly, one a peripatetic teacher, and then we have a poultry teacher at certain definite periods.

14509. (*By Mr. Latham.*) Have you not two poultry teachers?—No, only one. Mr. Rentoul came because the other teacher was not able to come at that particular date.

14510. (*By Lord Barnard.*) Will you tell us what the length of the course is?—The course is generally five weeks for dairy students, but in Norfolk they have two courses, one of a fortnight for butter-making students, and one of a month for butter and cheese making. In my opinion it would be a very great improvement if the fortnight was changed into three weeks, and the four weeks into five—the periods are not long enough—and the poultry course of three weeks increased to four weeks. That has been done at Reading for a long time, and I am quite certain we try to “cram” too much into the students in the three weeks’ course. You will excuse my using the word because we apply that to poultry also. I have mentioned that to the committee and they say they will consider it.

14511. If your managing committee contains representatives of the two or three counties I wonder when they go back to their own counties they do not tell their Councils what the deficiencies are?—Quite so, but they are not all
14511a powerful. They have made representations, and that is as far as they can go. I do not wish it to be said that I come here to find fault. I merely mention this because I think you would like the information. I do not think

our courses have been a failure. I only point out how I think they might be improved. The tendency on the part of the County Council is that a short course or two short courses is sufficient. Then again with regard to the question of scholarships I find fault with the Norfolk County Council because they put this question to all applicants for scholarships: “What are your circumstances? Can you afford to pay your own expenses?” I venture to think that is a mistake. I do not know where the idea was derived from that poverty was to be a qualification for a scholarship. I think the peer and the peasant stand in the same position with regard to a scholarship for technical instruction, and I think it is very unfortunate that a question of that kind is put. I think the asking of that question has kept several away that we ought to have had, and it also rather lowers the status of the scholarship work, because we get a less educated person, and I may tell you that my own experience is that it is a very great difficulty with us, the want of proper education in those that are sent, frequently. We do not wish to exclude them, but frequently we have students sent to us who really are not able to write an examination paper.

14512. What age are they generally when they come to you?—Generally 15; not under 14 because they would not be eligible.

14513. Have any of them been to secondary schools?—That is a question that we ask them now, but from my personal knowledge I know that comparatively few have been to secondary schools.

14514. They are of both sexes?—Yes, but mostly females.

14515. Do both the boys and the girls live in the same building?—No, we have none in the building. We have a register of approved lodgings.

14516. Do you find any difficulty in that, in having young lads and girls lodging together in that way?—They do not lodge in the same house. They are all separate, but we have very few lads.

14517. Even if there was only one sex do you never have any trouble with regard to discipline or matters of that kind?—No, we never have any trouble; for one reason, because the students that come are not all of the same class, and are not all of the same age, and perhaps two or three like to associate together, but the others do not. We have carefully considered the matter, and we think the present system better than having a resident hostel.

14518. Some of the students come without scholarships and pay their own fees?—Yes.

14519. What is that fee?—The fee for a full course for the month is £5, and, for butter making only, 10s. 6d. a week.

14520. Your operations are limited to the two departments, dairying and poultry?—Yes. When I say limited, the farm, of course, enables us to teach milking, but milking is an optional subject. Many of the students wish to learn milking and they are allowed to do so.

14521. Is it all practical work?—No; practical and theoretical. Theory is usually taken in the afternoons and practical work in the mornings.

14522. Who gives the theory work?—The teachers.

14523. Do you give instruction in chemistry?—Yes; elementary work at the dairy, and we have also the run of the town laboratories, and we have had special classes there, but again the difficulty comes in of the want of elementary and secondary education in those that come to us. There are very few of them who are able to take a course of dairy chemistry such as we have arranged at the town laboratories.

14524. Does every student who passes through the Institute go through an examination?—They have the opportunity of doing so. I do not say that all who come for a fortnight have an examination. We do not have an examination once a fortnight.

14525. It is entirely optional whether they are examined or not?—Yes. If they wish for an examination they sit for it.

14526. Do many of them come up for examination?—Yes, a great many of them.

14527. Do any of them get a certificate or a diploma?—That is a separate examination at the end of the year, carried out by a stranger, and certificates are given, but that is rather a stiff examination, and only those who have had a good education can pass it.

14528. What becomes of these men and women, do you know, after they pass out of your Institute?—Most of them engage in work in their own homes, some of them get married and take dairies of their own, and some go out

Mr. J. A.
Smith.

10 July, 1907.

Mr. J. A.
Smith.
—
10 July, 1907.
—

into situations. In fact we have a very great demand for dairy experts and dairy servants, and we are constantly supplying them to land owners and land agents and farmers.

14529. (*By Mr. Latham.*) Are your students as a rule poorly educated?—I am afraid many of them are. Many of them are daughters of small farmers or tradesmen, and I think that the rule in Norfolk about asking the question about their circumstances has a great deal to answer for in that way. I think it is a great mistake excluding those who are in a better position.

14530. Are we to take it for granted that the farmers' children in Norfolk are badly educated?—No; I think the Norfolk farmers as a rule—those who hold considerable quantities of land in Norfolk—are perhaps the best farmers in the world and their children are well educated; but the small farmers' children, I am afraid, have had a very poor education.

14531. Are there no secondary schools in Norfolk where these young people can improve their education?—I am afraid the secondary schools in the Eastern Counties are very deficient. I think the arrangements in Norfolk up to the present have been unsatisfactory, and the small peasant farmers, it appears, have been hardly able hitherto to afford the expense of a secondary school.

(Professor MIDDLETON in the Chair.)

14532. (*By Professor Middleton.*) What do you wish to say about research work?—On that question, generally, I consider a great deal has been done in the matter of agricultural education, perhaps all that one can expect with the means the Board of Agriculture have had at their disposal, but not sufficient considering how far the development is required and how far it is absolutely necessary. The Board of Education, I must admit, have held out a hand towards agriculture and have done a very great deal throughout the last few years to help on agricultural education. Their Code has greatly improved in its appearance towards agriculture, and I believe they are very anxious to do what they can to assist, and as a matter of fact they have assisted us lately. I think they have encouraged the county committees to do something by way of evening classes, and each of the counties have had a small grant made to them lately; they have earned a small sum during the last few years in connection with their classes.

14533. That is purely educational work?—Yes. I will come to the matter of research presently. What I respectfully suggest is that the Board of Agriculture ought to be provided with far larger funds for this purpose, and then I think there ought to be a County Agricultural Committee elected direct from the County Council. As it is now, the educational work is delegated to a sub-committee of the Education Committee, and that sub-committee has to meet and report to the Education Committee, and it is put in a secondary position. I think the Agricultural Committee ought to be a committee elected on purpose for their work by the County Council, and I would suggest with regard to each of those committees, that the secretary to the county agricultural association and the secretary to the chamber of agriculture ought to be members of a committee like that.

14534. (*By Mr. Latham.*) Co-opted?—Co-opted—those two at any rate, if not others. To revert to the question of scholarships again, I think the qualification for a scholarship ought to be carefully considered by each county and on no account to have the poverty qualification. I am not sure the time has not come when some examination should be imposed. I think sooner or later some examination ought to be imposed on those who qualify for scholarships. In the case of Norfolk, I have already mentioned there is a practical examination held publicly once a year for the £8 scholarships given by the Norfolk County Council.

14535. (*By Professor Middleton.*) You are of opinion that longer courses are desirable, I see?—Yes; that I have already pointed out. At the very least there should be a three weeks' course for butter making and a five weeks' course for dairying generally, and four weeks for the poultry course. In my opinion those are the lowest periods that should be adopted. I should like to see them myself longer, but those are the lowest. As regards research work, I would like to suggest that it is a great mistake to consider research work as completed. I do not know that it ever will be completed; there are questions that are constantly arising. I should like to mention just one: we are urged and we are all trying to develop the cow as much as we possibly can, to give as much milk as possible and for as long a period as possible. We are imposing

unnatural conditions to a certain extent; we are trying to force Nature and in that way a new difficulty has arisen, namely, parturient apoplexy. The Board have issued a most valuable leaflet on that subject, but we do not know all that we ought to know with regard to it yet. During the last few weeks it has been terribly prevalent in the Eastern Counties. When I went down to the county show I had 14 cases brought before my notice, and three veterinary surgeons that I know were all of them run off their legs attending cases. I suggest that that is one direction in which research is further required. Then there is the case of epizootic abortion. That was investigated by the Royal Agricultural Society some time ago and a valuable report was drawn up by them, but that is still a great difficulty at the present day and more requires to be done in that direction.

14536. That is under consideration at the present time.—I am glad to hear it. Then, of course, there are numberless other questions with regard to injurious insects and varieties of grasses, and so on.

14537. That is outside the dairy questions to which we have just been alluding?—Yes, I was thinking of agricultural education generally.

14538. (*By Mr. Latham.*) You say you advocate longer courses for dairying?—Yes.

14539. What are you going to teach beyond what you do now if you have longer courses?—A course of a fortnight for butter making is really not sufficient if you are going to get theory and practice in. A student can only learn the rudiments of it in that time, and for the practical work alone it is insufficient.

14540. I quite agree with that, but are you going into an extended method of teaching, would they go to lectures and that kind of thing?—Yes; of course we have lectures in the afternoon now. We are constantly adding to our work. Since the introduction of Dr. Gerber's butyrometer they have to learn the working of that and also the working of a separator; they have to learn to take a separator to pieces and put it together again, and I think three weeks should be the minimum, but I prefer five weeks or even three months if it could be done.

14541. I think you are making a serious mistake in merely asking for an extension of time from two weeks to three weeks. If you are going to ask for an extension of time at all, I think you should go for a considerably longer period?—I am merely putting the minimum at three weeks.

14542. I suppose you will agree that a fortnight is quite long enough to teach the actual butter making, but not if you are going into questions such as the properties of different milk and so on?—Quite so; I think it ought to be longer. Then the next thing I have put down here is "Legislation to follow on lines indicated by scientific investigation." Before I deal with that I would just like to mention one thing as regards the butter making. Ever since we began we have been advised, and it has been our practice, to teach the students to make the butter as dry as possible without injuring the grain or texture, but we have been dreadfully discouraged because legislation does not back us up, and when our students go out into the world and send their butter into the market, they have to compete with water-logged butter, and that is very discouraging. I mention that as one of the discouragements that technical education is met with, that we cannot get the support we desire, and it almost forces the question upon one's mind whether we are really doing the right thing in teaching our students to make their butter dry when they find that the only reward they get for doing it is that they are not able to compete with the water-logged butter that is allowed to be sold.

14543. (*By Professor Middleton.*) You are not satisfied with the 16 per cent. standard?—If it was adhered to and adopted, but it is not yet adopted, and anything more than 16 per cent. we should very much regret. Then as regards the International Dairy Congress in Paris in 1905, I had the privilege of sitting there as one of the British representatives. I need not refer to their conclusions because your Board was represented there, and you have access no doubt to their resolutions, but many of those resolutions I would commend to your attention. I agree with many of them. Then with regard to the unification of analytical methods throughout different countries you will see there were resolutions passed at the Congress, and that is a matter that is coming up again on the next occasion. It is a matter of great importance. Many other questions were raised; they were quite unanimous on the need for further agricultural and dairy instruction. They urged, of course, that winter dairy

schools should be formed, and that there should be an extension of the number of dairy colleges and domestic economy schools. The Congress very strongly expressed an opinion in favour of increased facilities for education. When I was in Paris I was very much impressed with the better system of marketing that they have. I do not think that their produce is better than ours, but it was shown in better form. Take even the turnips: the turnips were washed and bunched and shown in a very much better style than English produce generally is shown; and the same with the poultry. I do not think they were better poultry, but they were better shown and better marketed. I think we have a great deal to learn from their methods of marketing produce. I would also incidentally mention that I ascertained when in Paris that the French Government assisted the agricultural industry to a very much larger extent than we are assisting it in England—I understood to the extent directly and indirectly of three millions sterling per annum, but those figures of course you will be better able to verify than I am.

14544. I think that completes the summary of the evidence which you have put before us?—Yes; I think that is all.

14545. Before your Institute was started in the Eastern Counties what facilities had people for learning dairying?—Nothing whatever. What induced us to start in the Eastern Counties was this. Directly after the British Dairy Farmers' Association had an excursion and conference in the county, the East Suffolk Chamber of Agriculture formed a Committee to take up the matter. It followed on that, and from the establishment of our Institute dates really the improved system in butter making, and since then, of course, a great number of villages have been visited, and a great many remain still to be visited, and in one Division of Lincolnshire nothing whatever has been done at all.

14546. How was that Institute formed? As a limited liability company?—It was formed on that basis. At that time it was considered that on the whole that was the better way in which it could be formed.

14547. That is still the constitution?—Yes, but no dividend has ever been paid, and no interest has been paid on the money.

14548. I see you mention that you have about 80 resident students annually?—Yes.

14549. How many students can you accommodate?—10 at a time. We could accommodate 20 by taking two classes and having the practical work and theoretical work alternately.

14550. Does the farm belong to the Institute?—No, it is hired.

14551. Is it hired by the Institute?—Yes.

14552. So that they are tenants of it?—Yes.

14553. (*By Mr. Latham.*) Yours is purely a dairy Institute?—Yes.

14554. I do not quite agree with you about the scholarships. You simply think that the county scholarships should be thrown open to everyone?—No, I do not say that, but I do not think that poverty should be the test. I do not like the idea of excluding farmers' daughters because those farmers are in better circumstances. It lowers the status of the school and throws obstacles in our way.

14555. Why?—Because you get a less educated person and a person less fitted to take up the work of dairying.

14556. Surely if these people in better circumstances thought it was highly desirable that their daughters should come to you the scholarships would not stand in the way. They would not refrain from sending them because they could not get a scholarship?—By the mere fact of asking that question many a would-be student who had the paper put before him would put it on one side and object to it, and I cannot see why it is ever asked, because technical education is on quite a different footing from elementary education.

14557. If this education is to be provided out of public funds, does it not seem that it ought to be given to those who cannot help themselves?—If a test is to be applied at all, what I would suggest would be an examination test.

14558. That is not the question. There are a great many young people, both male and female, I suppose, that would rather come to you as private individuals than come through a scholarship?—They have the opportunity if they like.

14559. Is it not fair to give people that are not in such good pecuniary circumstances a chance of obtaining this information by means of a scholarship?—If it is a question

of one or the other it might be, but I do not see where it comes in with reference to technical education; there is not a word in the Act with regard to it. I think it arose in this way: that it was thought that free primary education at one time was to be limited to poor children, but nothing of that kind applies in technical instruction, and I think it is a mistake.

14560. Why should the ratepayers pay to educate these people's children who can well afford to pay for it themselves?—The payment hitherto has come from the "whisky money."

14561. It does not matter to me where it comes from?—I cannot see why the question should be asked. I should be glad to know if there is any clause in any Act of Parliament relating to it. I have always failed to find it, and it appears to me it is a mistake.

14562. Do the general people of the county think it is a mistake?—I have often had it mentioned to me that it is wrong, that it is bad policy, and if there is to be any differentiation I should put it on the ground of intelligence; send the most intelligent.

14563. Then in all probability I should think it would be more than probable that the poor people would be absolutely kept out?—I do not want to exclude anyone but I do not like that clause.

14564. There is a greater demand for dairymaids than there is at the present time for dairy instructors?—Undoubtedly.

14565. Then do you not think my argument is exceedingly sound, that you should do everything you possibly can to encourage those who cannot come to you without the assistance of scholarships?—Yes. I do not wish to discourage them, but I also do not wish to discourage the more intelligent ones to come.

14566. It is not a question of intelligence; it is a question of whether the parents are able to pay for the instruction or not?—I think it is a pity to make that a ground of exclusion.

14567. Do you have your students principally from the elementary schools?—We do not take them direct from the elementary schools. Generally a year or two elapses before they come to us, but most of our students have only attended elementary schools.

14568. You say their education is not sufficiently advanced for you to get the best work out of them?—That is so. It is very disappointing when you begin with the theory. I do not say they cannot manage the practical work.

14569. That is to say, when you ask them to write a paper they fail, in all probability?—Yes. I have been asked a question with regard to the examination. A very simple paper is put to them, and they cannot do it. It is very disappointing. Of course it meets us in all walks of life, the deficiency that has in the past arisen with regard to elementary education.

14570. As to the Agricultural Education Committee, you said you would have certain members co-opted?—Yes.

14571. Do you not think that might be carried very much further, and that instead of just co-opting the two men you named that it might be very useful to pick out a few farmers in the district and co-opt them as well?—I was not confining it to those. I was only suggesting those two as two members that ought to be co-opted in each case.

14572. With regard to your remarks about the water-logged butter, do you really mean to say that you find difficulty in selling your own butter?—No, we do not, but we have to compete with butter that is water-logged. We are teaching them to keep their butter as dry as possible, and then our students, when they go out in the world, have to compete with butter that is sold at a penny a pound cheaper, but which contains perhaps 20 per cent. of water.

14573. And even more?—Yes. The public are very indiscriminating; for a penny a pound they do not notice whether the butter is weeping or not, and it is a great discouragement to our students. Technically we are right in making the butter as dry as we can get it, but commercially we are wrong.

14574. Do you not think that the education you give to these young people at this Institute educates people generally about this very important question?—Many of the consumers are not educated; it does educate some, but my experience is that consumers as a class are very indiscriminating in what they buy, and if they see anything that is a penny a pound cheaper, they will buy it, and I think that applies to all products.

Mr. J. A.
Smith.

10 July, 1907.

Mr. J. A.
Smith.
—
10 July, 1907.
—

14575. You mentioned another matter that is very dear to me : packing ?—Yes, that is a very important point.

14576. Do you teach that in your Institute ?—Yes, we are very strict about that in the points we award in judging. Unless the butter is made so that it can be packed properly, they lose a number of points. The Great Eastern Railway has been a pioneer in that respect. They send boxes at a very cheap rate and a very large business is done with the metropolis, and especially in the suburbs of London ; and unless the butter is made exactly symmetrical it will not fit into the boxes, and if it does not fit in exactly, it is a dead loss.

14577. Does that apply to poultry ?—No, but a great deal depends on poultry being properly trussed and packed.

14578. Does your remark about packing apply to packing poultry for market ; do you teach them to pack poultry for market ?—Yes, we teach them to pack

poultry for market, but the great aim in poultry is that they should truss it properly and dress it properly.

14579. In our county we send a great deal of poultry to London and we know there is much education required in packing poultry for the London market as there is in packing butter ?—Yes ; we teach it.

14580. The moment a package of butter is opened or a package of poultry, it is virtually sold if it is packed properly ?—Yes, that is just what struck me when I was in Paris when I saw the way they marketed their produce.

14581. Why cannot we do it as well as they can in Paris ?—We can influence the students, but we cannot influence the whole of the country. We take care to impress it upon our students, that is one of our strong points, the packing of everything.

14582. You do not do anything with regard to fruit ?—No, we have not taken up fruit.

TWENTY-EIGHTH DAY.

Thursday, 11th July, 1907.

PRESENT :

The Lord BARNARD (*in the Chair*).

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. WALTER F. REID, F.C.S., F.I.C., called and examined.

Mr. W. F.
Reid.
—
11 July, 1907.
—

14583. (*By Lord Barnard.*) You are a consulting chemist, are you not ?—Yes.

14584. A Fellow of the Chemical Society and of the Institute of Chemistry ?—Yes.

14585. You take a great interest in horticulture and are a gold medallist of the Royal Horticultural Society?—Yes.

14586. You are also a member of various other societies. You appear here principally as representing the British Bee Keepers' Association ?—As a member of the Council and of a County Association.

14587. Do you speak on behalf of the Council, or whatever the governing body of that Institution is, or solely on your own account ?—On my own account I appear. I have been delegated by the Association in connection with the Chairman of the Association, Mr. Cowan, who is here, and who will speak with greater authority than myself on the administration of the Association. I would like to speak on certain parts of the working of the Association.

14588. You know the terms of reference to this Committee ?—Yes.

14589. So that we will as much as we can keep inside those terms ?—Certainly.

14590. You regard bee keeping as a most important rural industry ?—I think it is of very great importance to both agriculture and horticulture.

14591. Speaking of it for its own sake, is it a source of profit for the working classes ?—It is the most remunerative petty industry in connection with agriculture or horticulture that I know of. I know of nothing that pays better.

14592. Therefore anything that can improve the industry would be of advantage to the working classes in the rural districts ?—There is no doubt about it.

14593. I see by the official return here that considerable sums are spent by a great many counties in promoting the

industry in the way of lectures, and so on. Your own county, Surrey, in particular, spends £200 a year ?—That is so.

14594. That is out of the Local Taxation Residue Grant ?—Yes, I can speak in detail with regard to that. I am a member of the Council.

14595. Most of the counties seem to take the matter up. The British Bee Keepers' Association is a central Association ?—Yes. It is the parent Association of all the county associations.

14596. It has an office in London, I suppose ?—Yes.

14597. You encourage the formation of county associations ?—We do all we can to promote the formation of county associations.

14598. Have you a county association in every county now ?—We have, I think, 30 associations now.

14599. Do they hold meetings in London at the central Association and then disseminate knowledge to the local associations ?—No. The local associations hold their own meetings in their own counties, but we have general meetings of the British Bee Keepers' Association, to which the counties always send delegates. In fact, two members of each county association are entitled to attend the meetings of the British Association.

14600. What constitutes a member of a county association ?—Generally a subscription is required from each member, but in cases of poor cottagers, and so on, the subscription is nominal ; it does not cover the cost incurred by each member.

14601. What is the work which your county association carries on ? Is this £200 paid to you ?—No. It is administered by a joint committee of the Surrey County Council and of the Surrey Bee Keepers' Association. There are six members of the Surrey County Council on the administrative body. The fund which is administered by

that joint committee consists not only of the amount contributed by the County Council, but also of the funds contributed by the members of the Association. In Surrey, I think, it is £150, if I am not mistaken, from the County Council, and £94 from the Association, but you have the official record there, and you say it is £200, I think.

14602. These returns are made up from information given by the county authorities?—That figure is probably correct, then.

14603. This is for the year 1905-6. Perhaps you are talking of a later year?—At any rate the amount that was contributed on the last occasion, the last annual accounts that we have, was £94 from our own funds.

14604. I suppose your own funds are principally derived from benevolent persons who wish to aid the bee keeping industry for the benefit of their poorer neighbours?—To a great extent. There is what I may call a medium class of subscribers who pay just enough to cover the expenses; but on the other hand there are a number who pay very much less than the expenses which they entail on the Association, and then, as you say, we are dependent for the possibility of carrying on the work at all on larger amounts given by people who wish to encourage the industry.

14605. Will you tell us how you spend your money?—The chief method of instruction is in sending out experts throughout the whole United Kingdom, giving lectures at shows in the county, and visiting members at their apiaries. Practically each member of the Association is visited at his apiary by one expert of the Association, and verbal instruction is also imparted to the member in his own apiary. Then, with regard to the chief bee disease, foul brood—

14606. Are the services of these experts available for advice at any time. Suppose a man wants advice in a hurry, and writes?—The Association gives to each member one free expert visit. That is paid for in the member's subscription. If the member wishes to have further advice, say, in harvesting the honey at the end of the season, or anything special, then extra payment is made by the member who has such services placed at his disposal, but the amount is, of course, less. He, being a member, can get those services for very much less than if he were a stranger employing an expert.

14607. Are those services ever called for by persons who are not members?—That the Association does not undertake, only in one respect, and that is with regard to foul brood. In Surrey we help everybody that we know of. We go about and try to find cases of foul brood if we can, because it is infectious and it affects us all, so that we endeavour to find every case and stamp it out if we can.

14608. If your work is helped by County Council funds I should rather have inferred that everybody in the county had some claim on the services of the Association?—There is an agreement with the County Council that the money shall be devoted to certain purposes, and in our accounts those purposes are detailed. I have here a report of the last year and in it particulars are given.

14609. Now will you kindly tell the Committee what constitutes an expert?—Mr. Cowan, our Chairman, will explain to you fully the course taken with regard to the examinations, but I may say, briefly, that there are three certificates granted by the British Bee Keepers' Association, and those who undergo the examinations in connection with those three degrees are entitled to call themselves experts.

14610. You were going to tell us something about bee diseases?—With regard to foul brood, which is the chief disease, we have been very successful in Surrey in diminishing the amount of foul brood. I think we have diminished it from about, speaking from memory, 12 per cent. to something like 2½ per cent.—the number of cases.

14611. You also hold demonstrations at the Royal Show?—Yes. The British Bee Keepers' Association undertakes the management of the honey department at the chief agricultural shows throughout the country, that of the Royal Agricultural Society, the Dairy Show, the Grocers' Exhibition and the Confectioners' Exhibition at Islington. Those are the chief shows throughout the country where honey products are exhibited, and the British Bee Keepers' Association undertakes the management of the department entirely.

14612. Do you give many lectures?—Yes, very many lectures.

14613. When you have local demonstrations and lectures are the people who attend principally bee keepers, or do some attend merely out of curiosity?—I can speak from

personal knowledge there. I very often give lectures myself at shows because we have only a very limited number of experts in the county, and members of the Council assist. I was at Cobham yesterday, for instance, and gave a lecture. There are two classes of people who go there, those who have bees and want to know points about their management, and those who are interested in bees as in any other living object. Those who simply come to listen from general interest very often become bee keepers. When they hear something about the bees and the life of the bees, and so on, they keep them out of interest. Then we have the working man who wishes to know point about harvesting the honey and sometimes about marketing the honey. Those depend to some extent upon the income from their hives.

14614. How should a working man market his honey? Is there any co-operative system in operation?—It has been attempted to have co-operative associations in the counties for that purpose. It was also tried by the British Association. Mr. Cowan will be able to give you further information about that, but I believe the difficulty with the British was this; that a great many members sold the best of their honey for what price they could get, and the the honey which was, perhaps, second class or third class was sent to the co-operative centre; so that there was very great difficulty in getting British honey that was equal to the large bulk that comes in of uniform quality from abroad, although that quality may be inferior to the bulk of the British honey.

14615. That is rather typical of the agricultural class in marketing their produce of all kinds?—I think there is difficulty in that direction. It is rather too small an industry to pay the expense of central management. It is not like the dairy business, for instance.

14616. Is the consumption of honey increasing?—It is.

14617. Is the quality improving?—It is. It is improving very greatly of late years through the extension of the movable frame hive, because in a hive you can have honey from various mixed sources, some of it not very nice and some of it very nice. Last week the lime trees began to bloom, and where you are dependent on the lime trees for the bulk of your honey, with a movable frame hive you can take out all the previous imperfect honey and collect the very best while the honey flow is on from a certain source. The same with clover and any other sorts of honey. Therefore the quality of honey that is produced of late years is very much better on the average than the old quality.

14618. I live in the North of England where there is much heather. You have mentioned several kinds of honey. Have you ever made a study of heather honey?—Yes. We have that in Surrey, too. The heather honey is one of the best qualities of honey that we know, but it does not always please the southern palate, perhaps because they have not had it as children. It is a little strong in flavour and a very nice honey indeed; perhaps it is too strong for some palates, but it is an excellent honey.

14619. I gather there must be some very good reason why all the bee keepers in the low-lying villages in the county of Durham send their bees up on to the moors in the autumn?—There is a very good reason; because the heather comes into yielding at a time when the other sources of honey are over, so that they double their honey harvest. The same as on the Nile, they send the bees in boats up the Nile to extract the honey from the different flowers as they come into bloom.

14620. Are you satisfied with the present organisation all over the country. Is it sufficient? Is there sufficient information on bee keeping being given? Does the supply of information meet the demand?—No. I think it is quite impossible that it should, because the British Association has practically no funds. The British Association can only just cover its own expenses as it is now. It does what it can with the money at its disposal, but it only disposes of some £200 or £300 a year. If it had a fund of, say, £500 a year that it could reckon upon it could impart instruction in those counties, especially, where there is no county association.

14621. You try to encourage counties who have no association to organise one, I suppose?—Yes, always. It was only two or three months ago that we organised one in Kent. I was in the chair when it was organised.

14622. Do you urge them to obtain a grant from the County Council?—I do not think they require urging. They naturally obtain funds from whatever source they can, but I would like to say this with regard to the County Councils, that whereas the expenditure in Surrey has been most useful and beneficial towards bee-keepers and towards

Mr. W. F.
Reid.
—
11 July, 1907.
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Mr. W. F.
Reid.

11 July, 1907.

agriculturists and horticulturists generally in consequence, yet there are county associations where bee-keeping instruction imparted is of a very, I will not say pernicious character, but of a very useless character, for the reason that the experts who are sometimes appointed by the county councils are not experts from our point of view at all; sometimes they are old, what you call practical, bee-keepers who are far behind the times as regards modern bee-keeping; and again, and I am afraid the number of cases is growing, a young fellow straight from college is appointed as lecturer who knows nothing of practical bee-keeping at all; he can teach the theory of it, but county councils have full control over their own funds, and the county associations are not in some cases consulted in any way at all, although the British Association or the county association are always willing to assist in any way.

14623. Would it be desirable that your central Association should try and influence county councils on the subject by circularising them and their education committees, and so on?—It is a delicate question. We are always willing to do what we can, but we have, as I say, very little money available for circularising or anything else, but whenever we are consulted by a county council we are willing to help, and the possession of our first-class certificate is a guarantee that the possessor of it is competent to lecture as well as to give practical instruction.

14624. Are there any text books?—Yes, there are text books, some excellent text books.

14625. Is your certificate awarded on a written or practical examination, or both?—Mr. Cowan will give you the full particulars of that. There are three examinations passed.

14626. Do you suggest that you should have public money to assist the operations of your associations?—I think the same course might with advantage be adopted in the case of the central parent body of all the associations as is adopted in the counties in the case of the County Councils. There might be a joint committee to administer such funds, but I do not know of any way in which bee-keeping could be better taught than by the most experienced body in existence in this country for teaching it.

14627. Are you often in touch with the Board of Agriculture?—We are often in touch, but I wish we were more in touch with them, because if we were they would not send out our illustrations upside down. It is rather awkward to have to tell these people you are lecturing to on foul brood, for instance, that the illustrations are upside down, and that they must turn the paper the other way about so that they can follow you.

14628. Is there any other point you wish to mention?—No, I do not think there is any other point.

14629. Of course we must bear in mind what you have already referred to, that incidentally bees are extremely useful from an agricultural and horticultural point of view?—We have definite cases. Mr. Cowan has published some, and he will give you full information upon that, but we know especially one case, Mr. Richard Brown of Somersham, who did not get the yield he expected from his fruit, and he started keeping bees, and now it has improved simply marvellously. He was fully of opinion that that increase was due to his keeping bees, and he has increased his stock of bees to a very large extent since then, and he produces a large quantity of honey now, and in America it is quite a common thing to have hives of bees in the orchards, because some kinds of fruit are not self fertile and some agent must bring the pollen from other kinds of fruit, such as different varieties of apples, in order to fertilise them, and bees have been found extremely valuable in that respect.

14630. You mention America. You were in America as Vice-Chairman of the Horticultural Section of the St. Louis Exhibition?—I was.

14631. While in America you interested yourself in the work of the agricultural colleges?—Yes, I had to judge the products that were exhibited at St. Louis, and practically all the States had Agricultural Colleges which exhibited their work.

14632. What was the result of that?—Some of the exhibits were most excellent and showed very great improvement in the products of which they consisted.

14633. What do they do now that we do not do and that we might with advantage copy?—One thing, for instance, is research work. I can give you an instance. There was one very good exhibit that I saw where they had been carrying on, I think, for a series of seven years, research with the object of reducing or increasing the percentage of oil in corn—that is our maize, of course. They had started

with a grain containing about 4 per cent. of oil and they had selected the seed year after year according to the percentage of oil, and they had reduced it with one seed to 3 per cent., and on the other hand they had increased it to what would have been looked upon as an enormous figure formerly, 6 per cent.; so they have by that means produced a variety which would have very great value, and the production of such corn on a very large scale there would have meant an increase in the income of the farmers of a great number of million dollars, I do not remember the figure, but many million dollars annually from that one research.

14634. You think that a similar system of research ought to be adopted in the case of crops grown in England?—I think so. In the United States the different States are very wide apart, and the area so enormous that it is absolutely necessary that each State should have its own department. One grows cotton, another will grow wheat, and each one must deal with the industry which is chiefly represented within its own borders, but in Great Britain the difference in climate does not exist to that extent, and I think to have an association of that kind for each county would be wasteful and would result in duplication.

14635. Work like that should be done by somebody?—That kind of work should be done by somebody I think, because without having a research fund of that kind you cannot ensure the continuity which is necessary to develop new things or to try new things.

14636. Perhaps you are not aware that the Board of Agriculture have the subject under their consideration at the present time?—I am not aware in what way it is being dealt with, but my point is that it should be dealt with as a national question in some way. There are many points that I could indicate in this country where researches could be undertaken that require a series of years.

14637. Yes; but we have had evidence from a gentleman only yesterday, who emphasised the necessity for research in connection with barley. You have also gone as a member of the Agricultural Education Jury to Milan?—Yes.

14638. When you were in Italy you made some observations?—Yes. I was on the Agricultural Education Jury among other things, and I came across a system of agriculture there which I thought was of very great importance, and I sent a memoir upon it to Mr. Haldane. He has been good enough to lend me that memoir for the purposes of this inquiry. The system is a system of agricultural education that is imparted to all Italian soldiers. Nearly the whole of the Italian Army is instructed in agricultural operations. There are a great number of districts, 220, in which education is given, and there are demonstration camps. It may be an educational field or a demonstration camp, but at any rate in a large number of centres they teach the soldiers practically, and I believe that that form of work is welcome to the soldiers. They like it. I made inquiries of several private soldiers, and they seemed to take great pride in the work and enjoy it. The reason I refer to it here is that in that way the whole of the able-bodied population practically, especially the poorer classes in Italy, learn agriculture, and when they leave the colours they can always find occupation in agricultural work.

14639. I suppose, as a matter of fact, a very large proportion of the poorer classes in Italy are agriculturists, are they not?—They are; but having conscription in the country, the young people are taken away just at the very time when they are most susceptible to learn agriculture—the same as we do; we take the young fellows away and teach them something that is no good to them when they leave the colours.

14640. In England we do not take them away against their will. They come voluntarily?—That is not my point. My point is that when they leave us after they have done the work we have taught them, and that we have paid them to do, it is of no use to them and that is where they fail. I have the particulars of this if the Committee would like to see the *precis* of it. (*Handing document.*)

14641. As the Government take these young men away from their natural pursuit, which would be agriculture in a very large number of instances, it is only fair that in return for that they should help them in some way to follow out their profession or business in after life?—I do not think that is the only reason. I think one of the reasons was to find them an occupation.

14642. Would you suggest that such a thing would be practicable in this country?—Certainly, and I think the soldiers would be very pleased.

14643. Are you familiar with the British soldier's life?—Not all of it, but with a great deal of it I am.

14644. I am not a soldier, but I am familiar to a certain extent with the soldier's life, and I have been told by a relation of my own, himself 23 years in the Army, that it is impossible for the British soldier to find time when he has done his day's soldiering, as a rule, to take up any other employment?—My view is this: that the British soldier does a great deal that he need not do, and if he were allowed to do a lot of things that were useful he would do them. For instance, formerly manœuvring in large bodies was considered correct, but I happened to invent smokeless powder and that has done away with that. That necessarily must make a great gap in soldiers' occupations.

14645. We must not go too deeply into it, because that is a matter for the War Office, but my idea was that the British soldier and the Italian soldier could not at all be compared, and even though in one direction he may have been spared a certain amount of work, do you not think it possible that the authorities fill up his time pretty well except, of course, such leisure time as every man must have?—I am not competent to express an opinion on the efficiency of the Italian soldier, being educated as he is, with this addition to his curriculum as compared with our soldiers. Of course, man for man, naturally one considers that the British soldier is superior, but I am speaking with regard to his teaching, and much of the knowledge that is imparted to him is for use in time of war. Some of the items of instruction given to the soldier in Milan are necessary, for instance, cattle and horses, and spade work and a number of things are imported into the teaching which are useful to the soldier as a soldier; the two overlap to some extent.

14646. At any rate, you suggest that an opportunity ought to be given to the British soldier to learn agricultural work if he liked?—I believe you are going to have detailed information on this very subject. I think it began by the soldiers in each district in Italy volunteering and in farmers allowing them to work on their farms, those that volunteered, and in that way it spread so rapidly that the Government, after hesitation for about 10 years, I think, ultimately made it general, as it is now.

14647. Of course there is another feature that has to be considered: that our troops spend a great deal of their time abroad, far more than those of any other foreign country. A young man joins the British Army, say, at 18, sometimes younger, and by the time he is 20 he is off. You could not teach him much British agriculture out in India, for instance?—That is so, but, unfortunately, so many of them come back here again to try to find employment and they cannot do it, and if they did know something about agriculture they might possibly find it in the country. That was the only reason that made me send that report to the War Office and they seemed very glad to have it.

14648. You use the words in the last paragraph of your memorandum, "if they emigrate." I believe it is a fact, in consequence of the poverty of the country, that the lower orders in Italy emigrate a good deal to South America, do not they—to the Argentine, for instance?—Yes, a great many do emigrate. I have been in the Argentine myself, and the agricultural labourers there are chiefly Italians, because the natives themselves do not care about working in agriculture; they look after cattle principally.

14649. The Argentine is purely an agricultural country?—Chiefly.

14650. So that if a young man is drafted into the Italian army and later in life chooses to go to the Argentine you think he has derived an advantage during his military training which will stand him in good stead in his new home if he emigrates?—Undoubtedly, because without a knowledge of agriculture he has to learn it first. That is our difficulty in Canada. The young people go out there and know nothing whatever about agriculture and they will not have them.

14651. Because they have no knowledge of agriculture?—That is so. They cannot even dig, and what is the use of a man on the land who has no knowledge whatever of dealing with the land? He knows nothing; he cannot even do a day's digging.

14652. You think if the British soldier were instructed in the elements of agricultural work that he would be qualified to go to Canada and get work there after he had left the army?—Yes; he could not only get work as an agricultural labourer, but he could get land and till it himself.

14653. (By Professor Middleton.) With reference to the instruction of the Italian soldier that you have been speaking about, was it not the case that that began by giving theoretical instruction, and by the holding of

classes in agriculture for soldiers?—Yes, that was so, and the distribution of literature.

14654. And that that has spread because of the interest which the men themselves took in the instruction which was given?—Yes. I think that is what Commendatore Vigone said, and he is one of the greatest authorities.

14655. (By Lord Barnard.) He probably is an enthusiast, is he not?—He is probably, but he is a practical man, too.

14656. (By Professor Middleton.) You say you have diminished foul brood in Surrey from 12 per cent. to 2½ per cent. ?—To about 2½ per cent. I think those are the figures. I think that is nearly correct.

14657. Do you agree that the treatment of this disease is a matter really of care and the use of disinfectants and the taking of precautions?—I think the treatment ought to be as clearly antiseptic as, for instance, the treatment of our own sick in a smallpox or infectious hospital. It is an infectious disease.

14658. What I mean is, that it is a disease that is quite within the power of bee keepers to control?—Undoubtedly.

14659. Your experience has shown that?—Certainly.

14660. When you find any large amount of that disease you find the bee keepers in that district are badly instructed?—Yes, or badly organised.

14661. So that the presence of this disease indicates a lack of education on the part of the bee keeper?—Yes, to some extent.

14662. As a chief means of getting rid of this disease you argue for further education of the bee keeper?—I think it is the only way. If a man has a disease to deal with and does not know how to handle it he cannot cure it.

14663. Are there any other diseases of bees that trouble you at present?—Yes. In the Isle of Wight there is a serious one, and I believe this Board has sent an inspector down there to enquire into it.

14664. You have no knowledge of that disease?—No, I am glad to say.

14665. Who are the experts who are working with regard to bee diseases?—It is not a subject that is large enough for anyone to make a special study of, but I do not think we have any higher expert than Mr. Cowan himself. He has published a great deal of information on the subject, and he will be able to tell you all about the diseases of bees, and something about the disease in the Isle of Wight too, I think.

14666. (By Mr. Latham.) You spoke of the profit to the agricultural labourer by keeping bees?—Yes.

14667. What profit does it produce?—It depends, of course, like all other agricultural pursuits, upon the season to some extent. I live at Addlestone, near Weybridge, and I can reckon on getting 30 to 40 lbs. of honey from each hive, and if you sell your honey at about sixpence a pound that will give you practically the income in an average year. Sometimes, of course, you get more. We have accounts of as much as 100 lbs. in some districts, according to the flow of honey that is about.

14668. There is a strong feeling in some agricultural districts as to having a large quantity of bees about, is there not?—I have not met any general objection; I have personally never come across one. I might say the only thing of that kind that came under my notice was that a neighbour of mine came to me and said that my bees were eating his plums. I pointed out to him that bees with their weak jaws could not possibly have been eating the plums, but that they might have sucked them after they had been broken by wasps. I sent him in some of my honey, which I took from the hive, and soon after that he said to me that after all it could not have been my bees that had been eating his plums, because the honey did not taste of plums.

14669. Is there not great difficulty in getting competent teachers of bee keeping in the rural districts?—With regard to the teaching of bee keeping in rural districts, teachers need not be absolutely resident on the spot, they can teach in two ways, either practically in the apiaries in the summer when the bees are flying, or they can teach in evening classes during the winter.

14670. There is rather a feeling against evening classes, is there not?—I do not know that they do so much good as the actual practical work in the apiary; I myself am very much in favour of the practical work.

14671. How do you suggest that that can be increased, the sending of what you consider competent teachers

Mr. W. F. Reid

11 July, 1907.

round to teach the agricultural labourers in the proper season?—The British Bee Keepers' Association, if they had funds at their disposal, could send to those counties which are not at present represented by county bee keeping associations, and probably many of those are rural districts where the knowledge would be most useful to the inhabitants.

14672. What would be the probable cost?—In Surrey we can spend to advantage over £300 a year.

14673. I am on a county council myself, and I should like to know what would be the probable cost per county to send round to the several villages teachers of bee keeping to the cottagers?—I think you might put it at about a guinea a lecture.

14674. That would include the travelling expenses, would it?—It depends on the distance you have to go, and how you can get at the place, it would be a little more, naturally, if it was a long distance.

14675. Provided some of these county councils that are not very close to you wish to have bee-keeping instruction, what would be the probable fees that you would charge per season to the county councils?—You have an actual account of the Surrey Association there. I handed the book in.

14676. What would be about the amount that you would expect to be set aside for the purpose, provided the county makes application to you to have an itinerant teacher. Supposing he went to twenty villages during the season, we will say?—The number of lectures given in Surrey is recorded in that book. The Surrey County Council apportion £150 for that teaching.

14677. (*By Lord Barnard.*) I have had the opportunity of reading the account and it seems that the County Council of Surrey have entered into a written agreement with your Association under which they make you three grants, one of £70, one of £60, and one of £20, making a total of £150, and each of those grants is for a specific object. One is for providing an outdoor demonstration and one evening lecture, that is the £70; the £60 is publishing a monthly journal free to members, and engaging experts to visit and for secretarial and clerical work, and £20 for giving lectures in certain places, and then the balance of the amount spent by the Association on those three objects has to be provided out of the funds of the Association?—Yes, which comes out of our own pockets.

14678. (*By Mr. Latham.*) Now I want you to let us know what lectures would be necessary, first of all for starting these men in bee-keeping in the early spring, and then the taking of the honey and the placing of the bees away for the winter. Those are the three things that we fancy are badly managed?—In order to give effective instruction and to utilise the funds in the best way we find it is absolutely necessary to go to the people, and we go to flower shows throughout the country and find the people there who are interested in bees, because we have found by long practice for many years that it is impossible to bring an audience together in a rural district simply to listen to a bee lecture only; you cannot get them to leave their ordinary pursuits for that purpose. You may sometimes send a lecturer round at considerable intervals to deliver a lecture in some village hall or somewhere upon bees, but, as a rule, we do not get such satisfactory audiences in that way as we do if we go to a flower show or some place where agriculturists or horticulturists are collected.

14679. One question that gives a great deal of trouble is the hiving of the swarms of bees. Do you send people round to instruct in that?—We instruct how to do it, but as the hiving of the swarms extends over three months at least and may happen any day, it would, obviously, be impossible for us always to have a man at hand or anywhere near to do it, but we can, through a register of our experts in any neighbourhood or a register of our members, always supply anybody in any neighbourhood with a list of persons who may be called upon to help them.

14680. Do you make it known that these men will give instruction and advice if necessary?—Yes, the British Bee-keepers' Association issue a handbook for bee-keepers. Mr. Cowan has published the Bee-keepers' Guide Book, which is the best book on the subject, but the British Bee-keepers' Association also issue a book.

14681 I suppose we may take it for granted if any quantity of these men were to take up bee-keeping you would take enough interest in it to send someone down periodically?—Yes, we could send a first-class expert lecturer throughout the country if we had the funds; he is a gentleman who manages our apiary at Swanley.

14682. I have been steward of the Bee exhibitions at several county shows, and often men go there and talk the biggest rubbish I have ever heard in my life. Do you send men out to shows to manage the bees, and give lectures during agricultural shows?—Where there is a county association we always leave work of that kind to the county association. The possession of a certificate of the British would be a guarantee that the lecturer had sufficient knowledge of his subject not to talk nonsense anyhow.

14683. Would it not be necessary for this lecturer to hold some diploma?—He does; we give a diploma.

14684. I presume at most of these shows it would be just as well to make an application to you and let you appoint your own man?—I think it is better, if there is a county association, to do it through the county association, which must naturally have a better personal knowledge of the lecturers.

14685. But if he held the diploma from you you would know the man perfectly well, and would not that be a sufficient guarantee?—Yes, but there are many other things that are desirable in a lecturer; for instance, if he has a personal knowledge of the people in the neighbourhood, and knows who is keeping the bees, and how they keep them, he is a very much better man to deal with them and to advise than a stranger from another district; and then the cost of the journey is also considerable to a stranger. Supposing we were asked to give a lecture in Lancashire, of course we could do it, but sending a man from London would be a considerable cost.

14686. I do not think you quite understand my question. If these men in the several rural districts hold diplomas from you, you would know the men that were in the districts, and any recommendation from you in reply to an application for a man would be a guarantee of his capability?—Certainly.

14687. Would you not recommend that?—Certainly; in fact I go so far as to say a County Council ought not to spend public money unless the person giving the instruction holds a certificate of capacity for doing the work. Such a certificate is issued, and such a certificate ought to be asked for.

14688. I want to go rather further than that. I want to know whether you would not recommend the agricultural show committees to make the application to you direct to appoint a person to manage the bees in the show-yard, rather than go to a person that you have no knowledge of, whether they hold a diploma or not?—Certainly I would recommend that. That is what is done by the Royal and other chief exhibitions in the country that I have mentioned.

14689. I see you say that if you have an increased grant of £400 or £500 a year you might do a great deal more throughout the country. Is not that a very small sum to ask the country at large?—It is small, and we could do a great deal more if we had more, but even with that sum we could do a great amount of work of a general nature throughout the country.

14690. That means you should have local contributions to some considerable extent as well?—Certainly. The ground where there is an association is fairly well covered, but we must not forget the areas where there is no county association, and in those areas we might do a great deal of work.

14691. I should like to get exactly on the Minutes what you mean by the increased production in orchards where bees are kept. You say somewhere that by keeping bees in orchards the fruit culture can be considerably increased?—Yes, the yield of fruit from the trees is very largely increased, because in some seasons fertilisation of the blossoms in order to produce fruit is absolutely dependent on bees, and unless there are bees somewhere about, you may have in some districts sterile pear and plum trees, whereas if you happen to put a few hives near those trees then you get fruit. I am in a district where they say they cannot grow plums, and my neighbours have also said that they could not grow pears, but now since I started my bees we get both plums and pears. Where people cannot grow these things they often think it is the soil, but very often it arises through want of fertilisation.

14692. You would advocate that if people want to get a good production of fruit they ought to keep bees in their orchards?—I think it is very necessary. And the hives should be close to the fruit trees, because in our uncertain climate bees cannot always fly very far, and in our uncertain spring weather if the sun only shines for half an hour the bees will fly sufficiently to fertilise all the blossoms in their own neighbourhood if the hives are placed near to the trees.

Mr. W. F.
Reid.

11 July, 1907.

14693. I think there is a great deal of misapprehension with regard to the keeping of bees in the orchards themselves. I always maintain that it is absolutely necessary that they should be actually kept in the orchard. What is your opinion about that?—I quite agree with you. It is better for the fruit grower, and it is better for the bee-keeper to have the hives in the orchards although some bees lose themselves, especially in rainy weather, and many others when they are flying home loaded with honey knock themselves against the branches of the trees and fall to the ground and get numbed.

14694. That is a thing that will always happen where there are trees?—Yes, but we must not forget that bees very often live in woods, so that it cannot be fatal to them.

14695. You say soldiers do not make good labourers after they leave the army?—No, I do not say that, because I have employed many discharged soldiers and I prefer them to other labourers. What I say is that the British soldier when he is discharged from the army has no knowledge of any industry at all, and if they had a knowledge of agriculture it would absorb very large numbers of men when they left the army.

14696. Are not the great drafts of the British soldiers generally drawn from the rural districts?—I think many are.

14697. (By Lord Barnard.) I think that is hardly so. My belief is that the large towns are the greatest recruiting grounds, London especially; and then I think Glasgow and Liverpool come next as recruiting stations, and a great many come from Tyneside.

14698. (By Mr. Latham.) However, I have often employed reserve men, and I have found that they have been almost universally skilled as agriculturists. You rather think they should be taught something in the army to make them useful when they leave the army, but I always find that those men make very good labourers?—I also find them very good labourers. I have employed large numbers of them. I have put up several dynamite factories and have employed considerable numbers of men, and I prefer to have discharged soldiers under those conditions than any other labourers because they have a habit of doing what you tell them.

14699. They are disciplined?—Exactly.

14700. (By Mr. Medd.) Can you give any detailed account of the methods of agricultural instruction that are imparted to the soldiers in the Italian army?—It appears in the pamphlet that I have handed in. There is a course of 22 lectures given in the Milan District, and they are typical of the course given in the others. You will see the heading of each lecture set out in full in that document.

14701. We have had the estimate of the cost of an itinerant lecturer in Surrey. You put that down at a maximum of £150 at present?—£150 is not the cost of the lecturer only; £60 of that is for a journal that is published monthly to all the members.

14702. When I speak of the lecturer, I mean all that is included in the bee-keepers' work?—The educational work?

14703. Yes.—Yes, that is so.

14704. Is it not a fact that very considerable areas are quite unfit for the keeping of bees?—I could not mention any large area in Great Britain that is quite unfit for them.

14705. I happen to live in Gloucestershire. Would you consider the top of the Cotswolds a suitable place for bees?—You would not get a large surplus, but you ought to get a surplus there.

14706. A friend of mine, a well-known man there, told me that a bee-keeper had come specially to him and begged a little bit of land of him on which to set up some hives, and he laughed and said that he could not have chosen a worse place in England. The question is in regard to the probable expense involved in each county. There must be areas where bee-keeping is not likely to be profitable?—The most unprofitable area that I know of is where we are sitting now. Bees in this neighbourhood would get a lot of surplus, but they would get it out of confectioners' shops, and it will not be honey; it will be sugar. In Paris they have prohibited them from keeping bees within the area of the town.

14707. As I understand, your desire is that an instructor in bee-keeping should be officially attached to every County Council, just as they have instructors in farriery and other things?—I think I could say with the greatest confidence

that there is not a county in England where it would not be advantageous to have some instruction in bee-keeping.

14708. The rate of payment to peripatetic teachers in various subjects is very much below £150 per annum?—Yes. The £150 would not go to the one man for the one thing if the education were properly apportioned.

14709. No; but I was thinking rather of having one special teacher of bee-keeping, and what I then said is that I do not think counties can afford to pay a salary of £150 per annum?—It is not £150 to one lecturer by any means.

14710. All I wish to have you acknowledge is that the payments must be variable in different counties?—Undoubtedly.

14711. (By Mr. Latham.) In the Cotswolds there may be a difficulty in keeping bees, but I believe the clover fields in agricultural districts are large accessories to honey production?—Very important indeed.

14712. And if farmers would only keep their bees out in their clover fields, in all probability they would make as much honey from the clover fields as they would make in the orchards?—A great deal more. May I add to that by saying the very question of any particular area being suitable or not for bee keeping is one that could be solved in a very short time by any expert of experience. If you were to place me down, for instance, in any spot in Great Britain, I would be able to tell you in a very short time whether it would be likely to be a good place for keeping bees or not.

14713. (By Mr. Medd.) It all depends on the climate and the nature of the trees and crops in the various districts?—Exactly.

14714. In your propaganda are you advocating bee-keeping as a self-supporting industry or merely a subsidiary industry to other occupations?—I do not think in this country you can consider it a self-supporting industry. It is always a source of profit, but it is not sufficient for a man to live on in most cases.

14715. If it is conducted by anyone with knowledge it can be made a certain source of profit?—Yes, but not a sole means of livelihood. We have a few large bee-keepers that live by producing honey, but they are few in this country; in America it is quite a different thing.

14716. (By Lord Barnard.) I see in the Report of the Board of Agriculture with regard to bee-keeping in a certain county, it says, "instruction is given in bee-keeping by means of lectures in rural districts, and also by visits of advice to bee-keepers"; and in another centre it says "instruction is given by lecturers engaged as required." There is no mention of any bee-keepers' association expert. I suppose you would rather deprecate the work being done on those lines? It says nothing about the lecturer being a qualified man?—It is assumed that he is a qualified man, otherwise they would not engage him.

14717. I rather understood from you that they had engaged sometimes unqualified men?—That is so.

14718. Therefore we may assume, as nothing is said about their qualifications, that they are probably not qualified men?—We know from our experience on the Council of the British Association that that does happen. Mr. Cowan will be able to corroborate that. I think in very many cases so-called experts are not experts at all, and their tuition would be very much better left out altogether.

14719. Here is another case where the County Council makes a grant to the local Bee-keepers' Association. Lectures are given, and the Association arranges for experts to visit hives and give advice. It is probable in that case they would be experts?—We cannot tell, of course. If they were to say experts who had the first-class certificate of the British, we should know. Our expert in Surrey holds that certificate.

14720. You, as the central Association, ought to impress on the county associations that they ought not to employ a man who is not a properly qualified man. Do you do that?—We do that as far as we possibly can.

14721. The probability is that they were qualified men in that case?—It is most probable.

14722. The work can be done better, you think, through a local body than through a central society?—Yes, because they have the whole of the organisation of their particular districts.

Mr. T. W. COWAN, F.L.S., called and examined.

Mr. T. W.
Cowan.

11 July 1907.

14723. (By Lord Barnard.) You are Chairman of the British Bee-keepers' Association?—Yes.

14724. You are a Fellow of several societies, I think?—Yes, and I am also an honorary member of a number of foreign bee-keepers' associations throughout the world.

14725. As we have heard from the last witness, you have published various works on bee keeping?—I have.

14726. You would like to give the Committee, I understand, some information as to the work now being carried on by the British Bee-keepers' Association. You had an opportunity of hearing the evidence of the last witness, Mr. Reid?—I did, and I need not go over the same ground. The British Bee-keepers' Association was established in 1874 for the purpose of furthering the best interests of bee keeping as an important branch of agriculture. Prior to this nothing was done to foster bee keeping in this country, and the educational work has been carried on without any Government aid. When I say without any aid, I must except the leaflets that have been published by the Board of Agriculture, and recently the Board of Agriculture sent down an expert to the Isle of Wight to investigate the outbreak of disease there.

14727. Did they come to you for that expert?—No, he came from Cambridge, I believe.

14728. I do not mean exactly the locality; but did they apply to you for an expert?—No, they did not come to us. It would have been advantageous if he had had a bee expert with him.

14729. (By Professor Middleton.) He had the benefit of the help of the local expert?—No doubt, but you would not know whether the local expert was a properly qualified expert or not.

14730. (By Lord Barnard.) When the Board of Agriculture find it necessary to take any action in the interest of bee-keepers they should get the benefit of your advice and the advice and assistance of your Association?—Certainly. I think it would be advantageous, and we should always be pleased to give any advice we could or to recommend any experts.

14731. Do you consider that your Association embodies most of the best scientific knowledge on the subject?—Yes—practical knowledge, I should say, but we have no bacteriologists or men of that class to take up the subject of diseases. In the year 1880 the Council of the British Bee-keepers' Association commenced examinations; they appointed a Board of Examiners, and decided to grant certificates of different classes—first, second, and third class. The third-class examinations, usually held in connection with some show, were for practical work, and the candidates had to submit to an oral examination, a sort of preliminary examination, and if they were able to pass the third-class examination they were entitled to go in for the second-class examination. The second-class examinations are carried on by paper work entirely, on the same plan as the Oxford and Cambridge local examinations. We appointed certain superintendents and centres, and the question papers were sent down in sealed packets. Those were opened in the presence of the candidates, and handed to the different candidates on exactly the same plan as the Oxford and Cambridge examinations. If a candidate was able to pass the second-class examination he was entitled to go in for the first-class examination. The first-class examinations were held in London, and they were very strict examinations. There is a certain amount of paper work which is of the highest grade. They have to show a thorough knowledge of bee keeping, both theoretically and practically, and, besides that, they have to give an extempore lecture before the Board of Examiners or Council on any subject that the Board choose to set them at the time. They give them five minutes to collect their thoughts, and then they have to deliver their lecture, and if they can pass the lecture they are awarded the first-class certificate, which entitles them to work as lecturers. Those are the first-class men. Beside that they have to give evidence of a good general education, so that those who pass as first-class experts are supposed to be well-educated men.

14732. Could you tell us anything like the numbers that come up for those examinations?—I was just going to mention that. There have been 1,183 certificates issued in all, of which 951 were of the elementary grade, 182 second, and 50 for lectureships. These figures include male and female candidates, and the relative proportions are: first-class males 45, females 5; total 50.

14733. I hardly think it necessary for you to give us the proportions of the males and females, unless you think it important?—It is because some of these female lecturers are getting appointments, and some of them have obtained positions as experts in the Colonies. In the second class there were 142 males and 40 females; in the third class, 748 males and 203 females. The third class experts' certificates are simply to show that they are able to manage bees. There is no special education required in that class; but the first-class experts are capable of doing anything in the way of teaching or lecturing.

14734. Is there any fee for those examinations?—Yes. May I hand you the papers? (*Handing documents.*)

14735. What is the object of people going in for these third-class certificates?—The advantage is this, that we know that the men who come up for the first-class certificates are practical men, and are not only able to lecture but are thorough practical people. They have to pass their practical examination, that is the third-class examination, before they can go in for the second or first.

14736. I am surprised to find that as many as 950 third-class certificates are awarded. I cannot quite see what advantage those certificate holders get except as a public testimony to their knowledge. Is it a pecuniary advantage to them in any way?—No; except in villages they can sometimes attend people and give advice, but they are not qualified to lecture or to teach; some of the second-class experts are able to teach, but they are not qualified to lecture. Many of the third class hope to get a higher-class certificate, but fail to do so.

14737. Have you any publication in connection with your Association?—Yes, we have a manual that we issue, and leaflets. Here are a few of the papers that we distribute wholesale. (*Handing documents.*)

14738. Do you send copies of your publications to the Board of Agriculture?—I believe so; I believe they have got all our publications, or had them.

14739. Do you not think it would be a good thing if everything you published were placed in the hands of the Board of Agriculture?—I do not know that they do not get them; I believe our secretary sends them to the Board of Agriculture.

14740. Our assistant secretary is pretty well acquainted with all the publications and printed papers which the Board get and he says he has never seen these before?—It is our secretary's place to send them to the Board of Agriculture, and I will see they are sent in future.

14741. This is following up a previous question of mine on another point suggesting closer connection with the Board?—The Board of Agriculture has published three leaflets and we gave them assistance with these; in fact, the first leaflet on foul brood was written by myself for the Board of Agriculture.

14742. It occurs to me that the connection of your Association with the Board might be drawn closer with advantage?—Certainly; we should be very glad to be in closer connection with them. I gave evidence before the Departmental Committee on Fruit Growing, and in that evidence I went very extensively into the question of fertilisation of fruit trees by bees and the necessity of bees for that purpose. We advocate bee-keeping not only for the sake of the honey that can be produced, but likewise for the advantage the agriculturist derives by the fertilisation of flowers and fruit trees.

14743. Therefore we can refer to your evidence in the report of that Committee; at any rate I suggest to you that you should refer this Committee to the evidence you gave on the subject of fertilisation to that Committee?—Yes, that would save going over the same ground again.

14744. I see from your *précis* here that you have an experimental apiary?—Yes, we have an experimental apiary at Swanley in charge of our expert. It is open to public inspection, and at this apiary bees are kept and sent to different parts of the country for lectures and demonstrations. Besides his work at the apiary, the expert gives lectures and instruction at Swanley College, and likewise at Lady Warwick's College at Studley, and he assists by giving instruction and lectures for different County Councils.

14745. What does this experimental station consist of, how much land is there?—It is in connection with the Swanley College. They give us the land on which to put

the hives; we have a building there and a certain number of hives, and the expert goes down and works there.

14746. He does not live on the spot?—No; but he is there a great deal, because he has to give lectures at Swanley College, so that he is practically the greatest part of his time on the spot.

14747. Does he do any research work?—Not scientific research work, it is all practical work; but he is a man that we should have every confidence in sending with a scientific man.

14748. As a kind of assistant?—Yes.

14749. Your Association also appoint judges and lecturers at agricultural and other shows?—Yes.

14750. Do you volunteer to do that or do you wait until they apply to you?—The counties in which there are associations generally apply to us for judges and we send down a judge; and likewise the agricultural societies. We have been in touch with the Royal Agricultural Society now since 1879; we have conducted their honey department at the show, and have sent our expert lecturer down there.

14751. I have often been to the Royal Show and seen their exhibit. Do you think that exhibit is conducted with benefit?—Certainly; a great many have started bee keeping from attending lectures there and likewise seeing the exhibition of honey in the department.

14752. Now as to the finance of your society?—Our society derives its income entirely from subscriptions and donations; it amounts to between £300 and £400 a year, which is entirely insufficient for the demands upon us.

14753. How is the society governed—by an executive committee?—We have a Council of 21 members.

14754. How often do they meet?—We meet once a month.

14755. Where?—In London—in Jermyn Street. We have an office at 12, Hanover Square, and we have a meeting room there. The Society for the Prevention of Cruelty to Animals has granted us the use of their Board room for a number of years, and so we meet there regularly once a month. The county associations, which are affiliated to us, and which we promoted in the first instance, send two delegates, or have the right of sending two delegates, to our meetings, who are *ex officio* members of our Council.

14756. How many paid officers have you?—We have two, the secretary and our expert.

14757. Have you ever passed resolutions—have you any entries in your minute-books on the subject of the insufficiency of your financial resources?—Oh, yes. We have promoted these county associations, and we always recommend people in the county to join the county associations. That is a detriment to our society, because where the subscribers to our society find that there is a county association, they transfer their membership to the county association, and in that way—instead of our society becoming richer, it becomes poorer.

14758. I see by the account that the previous witness put in of the Surrey Bee-keepers' Association that you do get an affiliation fee?—Yes, we get an affiliation fee from the county associations. They contribute two guineas. But for that two guineas they get more than an equivalent, because we furnish them with medals, and we furnish them with all the publications at a reduced price, and do general work that they could not do.

14759. You told the Committee that you consider your resources are insufficient. In what way do you consider they ought to be increased?—Mr. Reid has mentioned £500, and with £500 we, of course, could considerably extend our work.

14760. Yes, but £500 from what source? Where do you think you ought to get the £500 from?—I think we ought to get it from the Government. The Governments in other countries assist bee keeping very much, and recognise the importance of bees to agriculture, more especially in connection with small farmers. I could mention what is being done in other countries.

14761. Perhaps you had better tell us what other countries do?—In Germany every teacher is required to have a practical knowledge of bee keeping.

14762. Do you mean every school teacher?—Every school teacher.

14763. In primary schools?—In the public schools. He is required to have a practical knowledge of bee keeping, and there are courses of instruction lasting from three to

six days given either at the Government apiaries or the apiary of some large bee-keeper, and the instruction is entirely free. In France, also, courses of lectures are given free of cost, and in the Luxembourg Gardens in Paris there is a large apiary established and worked at the cost of public funds. There instruction is given free to anyone who likes to attend. In Switzerland the education work is carried out very fully under the control of the bee-keepers' associations, aided by grants from the Government. There are a number of experimental stations. They have 30 experimental stations in Switzerland in charge of practical bee-keepers, and observations of various descriptions are taken at these stations, and they are carefully tabulated; your lordship will know how admirably the Swiss do tabulate their statistics. These are of immense benefit to bee-keepers, and it has done a great deal towards the advancement of bee keeping on modern lines in that country. Courses of instruction are also provided free of cost.

14764. Is there a much larger consumption of honey in foreign countries than there is in England?—I do not think there is. I think we have a very fair consumption of honey here.

14765. I do not know Switzerland, but I was calling to my mind a visit to the South of France I once made. I recollect at one's first breakfast in the morning, which consisted of coffee and roll and butter, honey was always one item; but it was not produced as in England, in a pot with the jam-maker's label on it—it appeared to have come direct from the honey grower. Can you tell me whether that is so?—In the South of France, in some of the hotels, they get the honey direct from the honey growers; in other hotels they get it manufactured—what they call table honey. They do that a great deal in Switzerland also. The English tourists there have preferred the manufactured honey to the genuine, because it was not quite so sweet, so that they catered to the tourist taste. But since they have passed a law in Switzerland prohibiting adulteration and insisting on the labelling of everything with the proper name, that is gradually dying out. But it is a fact that honey is served in the South of France and in Switzerland at all breakfast tables.

14766. It seems to me when I stay at a hotel in England that the honey is on the same par with the Gruyère cheese and Danish butter and other products, that it does not come from England at all?—No, that is so, because hitherto there has not been a sufficient supply for the demand. The quantity of honey imported into this country last year amounted to £33,897 worth, and all of that honey could have been produced in this country if we could teach the people to adopt modern methods. In Belgium, I should like to tell you, bee keeping is also largely helped by grants; and at certain seasons of the year the Government places at the disposal of bee-keepers the railways for carrying their hives to the mountains or to the heather at a low rate, for the same purpose, as was mentioned by Mr. Reid, to lengthen the honey season. In Russia the Government has apicultural schools, and likewise gives grants. In our own Colonies the Governments give grants and assist bee-keepers; in New Zealand, the Department of Agriculture helps bee-keepers, and in Canada in the provincial colleges bee keeping is taught, and they likewise have foul brood inspectors paid from public funds.

14767. Which is the principal country from which we get our imported honey?—We get much honey from Switzerland and Germany, but the bulk of the honey comes from Jamaica and Cuba, although the honey that comes from those places is not as good as our own honey, because they do not take the same care in preparing it. We have been teaching bee-keepers to adopt modern methods, and not to destroy their bees as they used to. Cottagers used to destroy their bees and mash up the brood with the honey, so that you had a mixture of honey and the juices of the larvae of bees all mixed together. Now that has been done away with wherever we can reach them and teach them better methods. Although we get them to improve, there is still a great deal of prejudice existing in some places, and they will not quite give up the old methods, and so we want to send instructors to teach them and show them that the modern methods are more profitable than the old.

14768. Can your instructors assure them that if they adopt the new methods they will get better prices?—They do get better prices, as a matter of fact, and a great many cottagers are able to get good prices for their honey. In the United States bee keeping, of course, is on an entirely different footing from what it is here; it is

Mr. T. W.

Cowan.

11 July, 1907.

Mr. T. W.
Cowan.
—
11 July, 1907.
—

carried out on a large commercial basis. They have immense tracts of pasturage, and some bee-keepers keep sometimes 2,000 or 3,000 hives. I visited an apiary in America where there was a bee-keeper who had 5,000 hives; and in California, where I have lectured for the State University of California on the subject of the fertilisation of fruit trees by bees, there are large apiaries of 2,000 and 3,000 hives.

14769. Have the people in California adopted bee-keeping principally for the purpose of fertilisation of their fruit?—No, the large bee-keepers have adopted it for a living, and they derive their incomes entirely from bees, but fruit growers are taking to bees for the purpose of fertilising the fruit. I can give you one instance. I was at a place near Newcastle where there was complaint that the Alexander peach trees did not produce any fruit. They blossomed freely but failed to fruit. I looked round the district, and found there was a scarcity of wild bees, and that there were no cultivated bees kept at all. I suggested that bees should be kept. My suggestion was carried out and the very next year that orchard began to yield an abundance of fruit, showing that its unproductiveness before was because of the want of bees.

14770. Where was this?—At a place near Newcastle, in California. I could mention a number of instances of that sort. In the United States they have a special department in connection with the Department of Agriculture at Washington that they call the Division of Apiculture, in charge of a superintendent, an apiarist, assistant, and bacteriologist. It is in the Bureau of Entomology. The Board of Agriculture here no doubt receives the pamphlets that they publish. They have published a great many leaflets and pamphlets connected with bee keeping quite recently, and they were all, of course, published free of cost to any who applied for them.

14771. (By Mr. Medd.) Are those pamphlets still published and distributed in the United States?—Yes.

14772. I was told that they had been almost discontinued owing to the vast expense?—I have received some pamphlets within the last month.

14773. Yes, you would probably, as what I may call a continuous correspondent of theirs, but as they were distributed two or three years ago to the institutions, and published at large, I am told that they have been almost entirely discontinued; the expense, as you know, of the bulletins, is such an enormous one?—Yes.

14774. You think they still go on?—I get the list every month of their publications, and there are a certain number of them published free and others they charge five cents or some nominal sum for.

14775. You have no idea now as to the method of circulation or cost of circulation over there?—I think the cost of circulation there is very expensive; it is done on a very lavish scale.

14776. You do not know how far it has been reduced within the last two years?—I should not like to see our Board of Agriculture here adopt the same methods that they do.

14777. This enormous effort on the part of the Department at Washington to bring everybody into touch with it has to a very large extent been abandoned. The old correspondents still receive documents, but the Board found that to go on to the extent you know they did circulate was far beyond what they could afford annually. You know that that was so?—Yes, but the Department of Agriculture in America does a great many things that we ought not to copy. A great deal of money was wasted by so large a free distribution. Some of their publications are most useful. With regard to bees, for example, just recently they published a pamphlet on diseases of bees, and likewise on queen rearing, which has been distributed gratuitously.

14778. (By Lord Barnard.) To go back to the point which we have rather wandered from, the work of your Society, have you considered that in accordance with the usual practice in this country, if your Society were to receive any assistance from the Government that as a corollary it would have to submit to a certain amount of Government control?—We should have no objection to that.

14779. Supervision, I might say, not control?—We should have no objection at all to any supervision, because all that is done is done in public.

14780. I suppose what your idea really is is this, that the Government should to a certain extent take this work up and should carry it out through the means of your Association by grant—take up the work of supervising

and assisting bee-keepers and use your Association as the means by which it did that?—Yes.

14781. Is there any other point you wish to bring to the notice of the Committee?—No, except that I would suggest that we have the machinery for doing the work and that we have the examiners for carrying on the examinations, and competent people, and we are always ready to give any advice.

14782. Have you ever thought of getting into touch with the county councils as well as the central authority?—We, in the first place, get the county associations into touch with the county councils, and we get them to apply to the county councils for grants. That was how the different associations got into touch with the county councils; it was through us in the first place, but there are a great many counties where there are no associations and the county councils in those counties either take up bee-keeping or not as they may desire, so that if we were able to get county associations in other counties we might work through them, but our centre being in London of course puts us out of touch with the distant counties.

14783. You do not do much propaganda work, do you, in the way of trying to induce those counties which have no associations to come in?—We have done up to the present, but we find now by attending different county agricultural shows that in that way we can induce people to take up the matter in the counties, and likewise through the *Bee Journal* and bee-keepers corresponding. We generally find somebody interested in a county, and if they are willing to take up the work of organising a County Association we give them all the necessary information and advice. All the counties are organised on the same basis and they work in unison with us; they have to publish their reports and balance sheets; we do not take any county into affiliation unless they do, so that we are satisfied that those counties that are affiliated to us are carrying on the work properly and the money is being properly expended, and if we find it is not we call them to book.

14784. (By Professor Middleton.) You have indicated two directions in which you would like the work extended: first you indicate that we may do a great deal more instruction in the country than we do at present?—Yes.

14785. The expert bee-keepers of this country are already in possession of information which, if it were more widely diffused, you think would greatly improve the practice of bee keeping throughout the country?—I do.

14786. So that we only require in your view money in order to provide further instructors?—Yes.

14786A. As a result of the instruction you are confident that the production of honey would be greatly increased?—Certainly.

14787. So that you would justify the application of public funds to this purpose on the ground that we would largely increase the production of a valuable product?—Yes.

14788. The other direction in which you indicated that assistance is wanted is in connection with experimental work and research, and you mentioned Switzerland as having a large number of experimental stations?—Yes.

14789. Can you indicate what the Swiss experimental stations do for the bee-keepers?—In the first place they study the different races of bees and try to find out which are the most suitable for the different regions. Then they keep a register of the weather. These stations are situated at different parts in the mountains and in the valleys, and they keep a register of the weather and the flora of the district, and then they tabulate the relations of the weather to the flora and the production of honey—the amount of honey produced by the different flora in different districts.

14790. That strikes me as essentially the kind of work that one would like the county associations to take up in this country?—The county associations, if they had the means, I suppose, would take it up, but they have not the means to do it.

14791. That particular work is not so much a question of means as of getting voluntary help from men who are interested in bees and flowers, getting them to record their observations?—We do that to a certain extent; there are a few people who do take observations and write reports of the weather and the honey they obtain.

14792. It strikes me that a central association like yours could be very useful in drawing the attention of county associations to the benefit that would be derived from such observations?—Yes, but the county associations, you see, are chiefly concerned with instructing their members in

bee keeping, and sending their experts amongst bee-keepers showing them what to do.

14793. Your colleague mentioned Mr. Brown, of Somersham?—Yes.

14794. A man of that kind would be very competent to make such observations and send them in to you?—Yes.

14795. A man of that kind could furnish you with most valuable information?—Yes, but we want 20 or 30 men to take it up.

14796. You do, but here is one man that occurs to me, in one district I happen to know?—Yes, and he would do it at once if we suggested it to him.

14797. And very likely you would find other men in other districts similarly capable. In Northumberland I came across a man who I think might also be useful in this way?—We should be very pleased to be put in contact with him.

14798. He was the secretary of the local bee-keepers association, if I remember rightly?—I have got out a notebook for keeping observations of that sort and a certain number of bee-keepers have had them, but they do not make any returns.

14799. Of course I can see the difficulty of getting these voluntary workers; still, the kind of work that you describe is essentially work for voluntary workers?—The work they are doing in Switzerland in that direction is most important.

14800. You have given great attention to the diseases of bees?—Yes.

14801. You are not a bacteriologist, are you?—To a certain extent.

14802. I understood you to say that you were not?—I do not profess to be a bacteriologist, I am a microscopist, but I have not done anything in it, lately because my eyes are not good enough for that work; I have worked with bacteria, so that I know something about them, but I do not profess to be a bacteriologist.

14803. You probably know that the investigations of the bacterial diseases of bees is a highly specialised work?—Yes.

14804. You referred to an American pamphlet which you received the other day?—Yes.

14805. Do you know the Americans have been giving attention to certain of these bacterial diseases for a number of years?—Yes.

14806. They have made very little progress?—Very little.

14807. Therefore we may be certain that if anyone wishes to take up this study he must be a thoroughly expert bacteriologist?—Yes. They have made more progress in Germany and Switzerland in connection with these diseases.

14808. Dr. Maassen and Dr. Burri you probably know?—Yes.

14809. They have given more attention to this particular subject than any others?—Yes. I know Dr. Burri, and I have been in communication with him.

14810. If any progress is to be made very competent experts would have to be engaged for this type of work?—Yes, but you want a practical man to go with them, I think; they may be good bacteriologists but they may not be good bee-keepers, and might not understand the diagnosing of the diseases properly.

14811. That is possibly the case?—You see a bacteriologist might see a larva that he would not recognise as a diseased larva unless a practical bee-keeper told him that it was diseased. When these diseases exist it is unfortunately very difficult to get at certain people—cottagers for instance—because, if they think you want to see anything about disease, they will not let you look at their bees. We have a number of people like that in the country, obstinate people, whose bees have got disease, and they will not allow any inspection of them, and we cannot get at them, although we know they are disseminating the disease all over the place. All we can do is to use antiseptic means to prevent disease, and we recommend certain things such as are recommended in this pamphlet on foul brood—what they should do to prevent the disease breaking out, but even then sometimes disease breaks out notwithstanding.

14812. Would you be in favour of legislation in connection with a subject like foul brood, for example?—Yes. Some years ago a deputation waited upon the President of the Board of Agriculture, but it came to

nothing because the bee-keepers were not sufficiently unanimous about it, and the cost was considered too great in proportion to the industry.

14813. I understand that the bee-keepers are not unanimous, and therefore I ask you whether you personally favour legislation?—Yes, personally, I should favour legislation and inspection.

14814. Do you know of any other workers in the diseases of bees in this country, other than yourself, who might be compared in any way to the foreign workers?—There is no one now. Dr. Watson Cheyne was at one time, but he is too big a man now to devote his time to diseases of bees.

14815. So that we have a great lack of expert workers in this country now?—Yes, we should like to know of some good bacteriologists who would take the matter up.

14816. That is precisely what we want to find.—That is just what we want. You see I cannot do everything myself; I am getting old, and we want some young people to come in and step into our shoes.

14817. (By Mr. Medd.) With regard to the importation of honey, are any of the cases marked as from the place of import?—I believe so.

14818. Is it a regular practice for either the bottles or the boxes in which the honey may be stored to be so marked?—We do not see the imports at all; the imports that I mentioned were from the returns given to us by H.M. Customs. We do not encourage foreign honey at all; we encourage the production of British honey.

14819. Do you not think it would help your Association to obtain a definite mark showing the place of origin in the case of each batch of honey imported?—Certainly it would.

14820. It would cause a differentiation between honey from Switzerland or Sweden or Italy or America, and so on?—Yes.

14821. After what you said with regard to Swiss honey it might cause a decline in the demand for it—I mean to say, speaking off-hand, I have no doubt the majority of the imported honey we eat is Swiss honey—or where you think it comes from?—There is a great deal of Swiss honey, but the principal honey that we get comes from Cuba and Jamaica; in fact, Cuban honey is sold as British honey very often; we know that for a fact.

14822. What I should like to see is each case of imported honey stamped with "guaranteed purity" and the place of origin. In most of the countries which import to us eggs and fruit, especially from Holland, it is all graded with regard to quality at the port of export, is it not?—Yes.

14823. If you could get that same system adopted with regard to honey it must help you, must it not?—It would be a great benefit. I have had a case brought to my notice quite recently of honey brought from Jamaica being sold as Scotch honey.

14824. That is just what I want to avoid.—Yes. That honey that I mentioned is being sold as Scotch honey, and the price charged for it is 3½d., and we know it is impossible for Scotch bee-keepers to produce honey at that price.

14825. What I advise you to do is to urge upon the Board of Agriculture the advisability of adopting that practice so as to protect both the British producer and the British consumer?—Yes.

14826. You are thoroughly familiar with Swanley College?—Yes.

14827. You do think, really, that the work as regards honey that is done at Swanley College is of value?—I think it is. They send a certain number of candidates up for examination and they pass very well. I think the instruction given there is very efficient.

14828. Hitherto we have had several witnesses speaking of the instruction at Swanley in other departments, and the verdict and experience has been identical with yours?—I went down to examine some of the candidates a few years ago, and I was perfectly astonished at their knowledge and the way they answered the questions, showing that they were well trained.

14829. Therefore you will be more astonished to know that the Kent County Council and the Board of Agriculture do not give one halfpenny of public money to assist Swanley?—I am certainly astonished to hear that.

14830. In regard to the future policy of your Association and the County Councils, I suggested to the last witness that each county might make a block grant for bee keeping and employ one or two lecturers according to the

Mr. T. W.
Cowan.

11 July, 1907.

Mr. T. W. Cowan.
11 July, 1907.
—
area of its particular county. Going a step further, my own view is that to avoid complications and difficulties in the allocation of the money locally, that the Board should allocate a fixed sum, ear-marked for agriculture, and that it should appropriate it as the "whisky money" is now appropriated to each county. Would it fall in with your idea if for all the subsidiary branches of agriculture or horticulture such as bee keeping the Board of Agriculture allocated annually a certain grant?—Yes, certainly.

14831. That would secure the appropriation of that grant solely to bee keeping?—Yes.

14832. Whereas if you allocated any amount, say, £4,000 to Berkshire, for example, they might not give £1 of it to bee keeping, and another county might give a great deal. My proposal therefore is that you should urge upon us and upon others the possibility of the Board making a full block grant to cover the whole of the agricultural expenditure beyond what is annually given by the county authority, and that in addition smaller or particular sums should be ear-marked for particular branches of instruction?—Yes.

14833. You agree with that?—Yes, quite. I have some testimonials here with regard to the work of our expert if you would like to glance through them. (*Handing documents.*)

14834. (*By Lord Barnard.*) Do you print your annual report?—Yes.

14835. You have not given us a copy of it?—I have not one with me.

14836. It probably would indicate better than anything else the scope of your operations?—I will have one sent to you.

14837. (*By Mr. Latham.*) The scheme that was handed in by the last witness refers to Surrey only?—Yes.

14838. Have you any book that refers entirely to your Association?—Yes, that is the annual report. I will send you several copies of that.

(*The Witness subsequently sent to the Secretary copies of the report referred to.*)

The Rt. Hon. HENRY HOBHOUSE, called and examined.

Rt. Hon. H. Hobhouse.
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14839. (*By Lord Barnard.*) I think most of the members of the Committee are well acquainted with your interest in and experience of the subject of agricultural education. You appear here as the representative of the County Councils Association?—Yes, to some extent, and in my capacity as chairman of the Education Committee in Somerset as well.

14840. Would you be good enough to give the Committee your views on the subject of the provision now made for agricultural and scientific instruction in the county of Somerset and the south-west of England generally?—Dealing with the higher types of agricultural education as distinct from what is given in secondary schools and lower institutions, I should say in the south-west of England the provision for that class of education is still very defective.

14841. You have no colleges or institution in the West such as other parts of England have?—No, not of a strictly public character.

14842. Has such a subject ever been mooted or considered in your county?—Yes, there were some negotiations, when the Technical Instruction Acts were first passed, between my county and the neighbouring counties with a view of establishing such a college, but it fell through because at that time none of the neighbouring counties were willing to join, and we considered that we had not sufficient funds at our disposal to establish a college all to ourselves.

14843. I suppose your county has not consulted the Board of Agriculture at all, have they—in the past, I mean?—Not officially.

14844. I dare say you are aware that the Board of Agriculture has for some time past been making great efforts to encourage counties to organise their higher agricultural work and also to advise them when necessary?—I believe that Mr. Brooke-Hunt did attend a meeting of our Committee with a view to considering the situation some years ago, but practically nothing resulted as regards the establishment of an agricultural college.

14845. Probably in the altered circumstances of the present day there is less chance than ever of it?—It is difficult now to see where the money is to come from, because other branches of higher education absorb so much of our funds.

14846. I do not know whether you are familiar with these other institutions which you see marked on that map?—Some of them.

14847. I dare say you know they all of them have ample facilities for teaching a larger number of students—certainly more of them than at present attend?—I dare say that is so.

14848. Have your county ever considered or ever practised a plan of giving scholarships to enable intelligent boys to go away to other places?—Yes, we have given a few scholarships. We have sent boys to Dauntsey, to Reading, and I think in the past, though not very recently, to the Durham College of Science.

14849. Supposing, for instance, there should be an exceptionally clever farmer's son who might probably develop either into a very high-class farmer or, perhaps, a lecturer or teacher or scientific man, are there any means by which, if his own resources do not enable him to do so, he could get the highest possible technical and scientific instruction, including, of course, a Bachelor of Science degree?—Our system of agricultural scholarships would hardly carry a man up to the Bachelor of Science degree. We do award two or three senior agricultural scholarships which are usually held at Reading, but which I think would only carry a lad up to the age of 18, hardly long enough to enable him to get a first-rate degree.

14850. I do not know quite whether you agree with me, but it strikes me as being rather a misfortune that the county of Somerset should not offer such facilities to clever lads?—I am afraid that these kind of facilities are not valued as much by the agricultural classes as they ought to be.

14851. Of course Somerset is almost exclusively an agricultural county?—Very largely so.

14852. Therefore it is probable, perhaps, that young men do not go from agriculture to other walks in life. I should have liked to have ascertained whether other classes of scholarships leading up to degrees other than agricultural degrees are given in your county?—Yes; we have a very successful course of scholarships other than agricultural ones and they are very much sought after.

14853. Then in your agricultural county, agriculturists are worse off than other people?—I am sorry to say that many, not most, of our farmers prefer to put their sons into other lines of life if they are clever.

14854. I am not familiar with agriculture in Somerset. You have no derelict land, have you?—No, practically none; but, still, the profits are not very great nowadays.

14855. Do you think it is a good plan in the case of these higher scholarships of locking up the agriculturists in a compartment by themselves?—The agriculturists are free to take advantage of the other scholarships and many farmers' sons do get other scholarships. The agricultural scholarships are given as a sort of privilege to the agricultural classes over and above the ordinary scholarships, one reason being that we found the ordinary farmer's son could not compete very successfully with the sons of other classes for the ordinary scholarships.

14856. That leads us to another question upon which we have had opinions from a great many gentlemen, and mostly to the same effect, which is that the secondary educational facilities within the reach of the farmer's son and the young man who is going to farm are not sufficiently good and available to enable him to take advantage of the higher education?—Do you mean good in the general education sense?

14857. Yes.—I think we have a good many good secondary schools in our county, but they are not most of them perfectly well suited to train an agriculturist.

14858. Many witnesses who have appeared before us

*Rt. Hon. H.
Hobhouse.*

11 July, 1907.

have stated it very definitely as their opinion that an agriculturist does not require special training in a secondary school; that the ideal education for a rising young farmer, a man of good position I may say, is that he should have the best general education that can be got up to the age of 16; that he should then go upon a farm, either his own father's farm or somebody else's farm, and for at least two years, or perhaps more, have practical experience of farming; and then that he should go to winter courses at some college or institution or attend lectures and generally acquire sufficient scientific education, which he could assimilate in consequence of his previous good secondary education to make him a good farmer?—I think ideally that is right, but practically many of these young farmers when they once leave school never go back to school again in any shape or form; and even from the point of view of giving them a taste for agriculture afterwards by keeping them in the ranks of the agriculturists, I think it is highly desirable that there should be certain secondary schools with, I will not say an agricultural side, but with an agricultural bias. I can give you an instance from my county if you wish it. We have endeavoured to foster that class of school in my county.

14859. Perhaps you will agree with Mr. Turnor, who was here yesterday and strongly impressed upon the Committee his view that such subjects as tended to a rural bias were as valuable for purely educational purposes as a great many other subjects, even though a man was not going to be an agriculturist?—I think they can be made quite as valuable in the hands of a competent teacher.

14860. (*By Mr. Medd.*) Could you now give us the instance of the secondary school to which you referred?—In our county we have three schools to which we endeavour to give this rural character by means of special grants given by my County Council, and this particular one that Mr. Medd has visited, and is acquainted with, is situate near Wedmore, in a purely agricultural district without a small town near, many miles from a railway station, and there we endeavour to influence the science teaching, in fact, a great portion of the teaching, to bear directly on rural subjects, to be illustrated rurally, and to be accompanied by practical work, both in the garden and in the workshop. I think Mr. Dymond, who has recently visited this school, and Professor Hall, who visited it not very long ago, were both very well satisfied with the results, but I am bound to add we do not find that class of work very much appreciated by the ordinary inspector of the Board of Education.

14861. The school itself is in quite a rural district, is it not?—Purely rural.

14862. Many of the children, boys and girls, attend on ponies, or bicycles, from some miles around every day?—Yes: there is no lack of interest in the school.

14863. And no lack of interest amongst the parents?—No; quite the contrary.

14864. (*By Lord Barnard.*) Do you consider that the rising generation of farmers, as a whole, in the county of Somerset are fairly well educated?—I do not think they are so well educated as they might be considering their position in the county: they are very intelligent in many ways, but, I think, they would be all the better for a little more scientific education.

14865. Does not every recognised secondary school receive some maintenance grant from the county?—Yes, in my county.

14866. I see a mention made in the report of extra grants being given?—Yes, the three rural schools I mentioned have the same capitation grants as the other schools, and, in addition, they receive £50 a year for special teaching. This information in the report, no doubt, has come from our Agricultural Instruction Committee. We have also the County Education Committee. We have two Education Committees in my County, one dealing with purely agricultural subjects.

14867. You have an Agricultural Instruction Committee as distinct from your Education Committee?—Yes.

14868. Does that Committee receive a block grant from the Council?—Yes, £2,500 a year.

14869. And is responsible for agricultural education?—Yes, for encouraging the agricultural instruction in the county.

14870. To whom do they report?—They report to the County Council.

14871. It is not a Sub-Committee of the Education Committee?—No, it is a separate Committee with a separate scheme.

14872. Are there any outside members on that Committee?—Yes; seven, I think, representing the different agricultural societies in the county.

14873. It is not a Statutory Committee at all, is it?—It is formed under Section 17 of the Act of 1902 by a scheme approved by the Board of Education: all the schemes have to be approved by the Board of Education under that Section.

14874. You consider this as educational work?—Of course—it is educational work, only a different branch of educational work.

14875. A good many witnesses who have appeared before us have not treated this subject as educational, that is to say, they have not regarded the work done by the counties under the various headings specified in this report as the education of boys and girls, but as instruction of those engaged in an industry, or of those who are just contemplating going into that industry?—Perhaps we are using educational in different senses. It is education, from my point of view, even if it is given to adults, instruction, at all events. If you teach a man how to lay a hedge, or make a ditch, that is instruction: and payment for it comes out of the higher education funds. I think you will find that is so in every county—that the payment for all these subjects comes out of the higher education funds, the "whisky money," or the rates that are levied for higher education: in that sense it is all educational work.

14876. In most of the cases that we know of it has, I think, come from the "whisky money": I do not think much of it has come from the rates?—The rates are largely levied for other educational objects.

14877. Is this use of the "whisky money" limited by Act of Parliament?—Yes, it was appropriated by the Act of 1902 to higher education.

14878. In its origin it was not, was it?—No, it was at first optional on the part of the counties, but since 1902 it has been compulsory.

14879. At any rate, whatever may be the facts at present, some people are of opinion that there ought to be a broad distinction between education and instruction as far as agriculture is concerned. Take, for instance, demonstration plots, of which we have heard a good deal in this room; do you think that they are purely educational as distinct from instruction?—It all depends on what you mean by education. As I explained before, I was using it in rather a wide sense. I should think a farmer might get a good deal of scientific education from demonstration plots if they were properly conducted. I do not wish to lay any particular stress on the meaning of the term. We thought agricultural instruction could be better administered by an agricultural body than by a body of pure educationalists. We find, as a rule, that the agricultural classes do not take a great interest in purely educational work, and that is why we have divided our committees.

14880. I will use another term—the ascertainment and diffusion of facts useful to practical agriculturists, for that after all is the purpose very largely of demonstration plots?—Yes.

14881. That is really what I mean. The duties of the agricultural lecturer in a great many counties include offering his services to agriculturists?—Yes.

14882. I do not know whether that is done in Somersetshire?—Yes.

14883. For the purpose of giving advice?—Yes; our agricultural lecturers are instructed to give that assistance.

14884. We have found that in many counties that is taken advantage of by a considerable number of farmers, and an increasing number of farmers. I do not know whether that is so with you?—Yes, I think so.

14885. I merely mention that subject as one which you would scarcely consider as educational. I do not know whether you know the scheme which Lord Fitzmaurice has established in Wiltshire, and is very keen upon developing further, of having one Agricultural Committee of the County Council who shall be charged with all duties—he would like to see them charged with all duties which would bring them into contact with one Government Department, that is to say, that an Agricultural Committee which might well have control over education, or instruction on the subjects we have just been discussing, and other matters, like allotments and small holdings, should be appointed, and act as the Executive Committee for dealing with the diseases of animals, and so on?—I think any committee in my County that dealt with all those subjects would be rather overworked.

14886. His idea was that that Committee should sit at

Rt Hon. H. Hobhouse.
11 July, 1907.
different hours in one day to perform its different functions, and that one man might perhaps be on the Committee at each of these hours, and that he would be much more likely to come to a county town if he felt he would get over all his work in one day instead of having to come repeatedly for half an hour on separate Committees?—That no doubt is true, but we can solve that difficulty by calling the different committees at successive hours on the same day. Many of the members are common to each Committee, but you do want a larger element of educationalists on the Instruction Committee than you do on the Committee that deals with the diseases of animals, and the small holdings. I think every county must judge for itself, the size of the county, and the circumstances are so different, and in my county I should not be prepared to amalgamate them all.

14887. Such a subject as that would probably involve legislation, because some of these committees are Statutory Committees?—Yes.

14888. At any rate, you are satisfied with the plan which you have. Your plan again differs from that of many other counties where the Agricultural Committee is a Sub-Committee of the Education Committee?—What was in our minds when we formed these two committees was that the Education Committee under the Act of 1902 would be overworked if it dealt with agricultural matter. That was our leading reason—the work was so enormously heavy and you cannot get the agriculturist to take great interest in that work, and the plan has not worked badly.

14889. I suppose you have a good number of agriculturists on the Committee?—Yes, a large number. The Board of Education made it a condition that we should have a certain number of the same men on both committees so as to keep up a link between them.

14890. (*By Mr. Latham.*) You find it works very well?—Yes, on the whole it satisfies the farmer, and that is the main thing.

14891. (*By Lord Barnard.*) What is the attitude of farmers in the county of Somerset towards agricultural instruction generally?—They approve of some branches of it: they approve of our dairy schools; those are cordially supported, and they approve of peripatetic instructors especially those who go round to the dairies and give instruction in cheese and butter making, and to some extent their sons attend the lectures on poultry keeping, on horticulture, and orchard culture, which is also a subject of interest in my county; but the agricultural classes are not well attended I think, and when it comes to some of the other things they do not like them. For instance we established some years ago a county experimental farm where we proposed to carry out some interesting experiments. I may say we got a grant from the Board of Agriculture for two years for the experiments carried out at that farm, but the farmers never took to it; as they expressed it, they did not think they required to be taught how to farm. It was pointed out to them that the experiments were being carried out for their advantage at the public cost, but that did not weigh with them sufficiently, and as soon as they became a majority of the Committee they proceeded to close the farm, and gave it up.

14892. You are no doubt well aware that that view among farmers was universal all over the country a few years ago, and in every county they said it was hopeless to expect, as some of them described it, college tutors to teach practical farming. That was almost the universal feeling?—There were no college tutors at our farm; the manager was a man who had had large practical experience.

14893. The Professor perhaps was?—No, there was not even a professor there.

14894. How did you carry on your scientific experiments?—The manager there of course had had a scientific training as well as a practical training, and as far as I recollect we took some advice of the Inspector of the Board of Agriculture on the subject. However, the work was sufficiently good for us to get a grant for, I think, two years, and then it had to be given up owing to this local feeling. I do not say that there were not objections to the farm, that is to say, it was not in a very accessible place, and the soil was not very good, although to my mind the poverty of the soil in a way was a recommendation.

14895. The farmers did not go because they did not see the use of it?—That is so, broadly speaking.

14896. Are you aware that the same feeling was held in almost every county in England at one time?—I believe in several of the counties of England, even at that time, there were experimental farms being tried which commanded a good deal of support from the agricultural interest.

14897. I was going to ask you whether you are aware that that feeling has steadily decreased, and the evidence we have had before us is that amongst the younger men particularly there is an increasing disposition to go to these farms?—I hope that is so.

14898. In the county of Northumberland there is a county experimental farm at a place called Cockle Park. The members of the County Council are not unanimous in its favour, and it has been seriously threatened at times, but the last time it came up the majority in its favour on the Northumberland County Council was much larger than it had previously been. I dare say you will believe me when I tell you that the number of men who go from my own part, the southern part of the county of Durham, right up to the centre of Northumberland to visit this farm is increasing year by year, and that their interest in it is developing greatly?—I know that the interest in the North of England in these matters is much greater than the interest in the South.

14899. Only it had to be created at the first, and that is what I want to direct your attention to?—At the time this farm was established I paid visits to Holmes Chapel, and one or two other institutions in other counties, and I found that the interest in the experimental farms was very great in those counties.

14900. Perhaps you did not go sufficiently far with it from the scientific point of view?—No, I do not think that was the reason. I think farmers thought that it was not practical enough, that it did not pay, and we tried to explain that it was not possible to carry on experiments and make a farm pay at the same time; at least, you would be extremely lucky if you did.

14901. Have your farmers always been in favour of dairying instruction?—Yes; there has been a very successful cheese school carried on for a great number of years through the Bath and West of England Society first, and now it is being continued by our Agricultural Committee; that school has always commanded the support and approbation of the farmers.

14902. I wonder they do not adopt somewhat of the same attitude towards agricultural instruction generally. You say, I think, that the lectures are not extremely well attended?—I think the lectures on orchard culture are well attended, but the purely agricultural lectures I do not think command so much support; it depends a good deal on the lecturer.

14903. Yes. Perhaps you will agree with the evidence given by a good many witnesses here to the effect that really the only real use of lectures is to arouse and create an interest in the subject, and that in many counties we have been told that the interest has been aroused, and the farmers will now go voluntarily, or write to the local institution or the county lecturer, and so on, for information, and that the lectures are gradually being discontinued as unnecessary?—I am afraid we have not roused sufficient interest by our lectures to carry them further; we may do so in future.

14904. Perhaps the south-country farmers require more assistance and attention than in some other districts. We have had the same difficulty in the northern and midland counties?—I am only speaking of my particular county, and I do not wish to press it too far.

14905. Is there anything more you would like to say with regard to scholarships?—I think they might be carried further if there was a greater demand for them; we do not get a large number of candidates for these scholarships.

14906. Do some farmers' sons complete their education at the elementary school, or do they complete it at a secondary school?—Many of them do not go to the elementary school; they take advantage of the secondary schools very largely, and a good many of them go to private schools.

14907. Do you think when they have done school that it is very difficult to get them to take up educational subjects again two or three years afterwards?—Yes, I think that is so with the purely farming class.

14908. We have been told by a great many teachers in these institutions, who have been before us, that they can always tell a boy who has been to a secondary school, or the boy who has not had a good secondary education, even though the well-educated boy may have forgotten some of the things that he learnt at the secondary school?—Yes, I should think a good secondary school education is bound to leave some trace behind it in after life.

14909. Which could be developed by means of winter courses, for example, afterwards?—Yes.

14910. You have never had any winter courses?—No, there has never been any demand for them.

14911. We have been told that sometimes the courses create the demand. Is there anything else that you would like to add?—I should like to emphasise the fact that all the way through this subject a very great deal depends on the training of the teachers. One reason why there is not more rural instruction, if I may so call it, given in our secondary schools is because of the lack of special training of the teachers.

14912. Do you mean teachers in agricultural schools?—I am speaking now of teachers in schools generally.

14913. In all classes of schools?—In both the elementary and the secondary schools, to my mind. Of course, those men, as a rule, know very little about agriculture, and have had very little training in agricultural science, and it is only the exceptional kind of man who is able to give this kind of rural instruction satisfactorily. Therefore you really must go back to our training colleges if you wish to make any impression on these boys in these subjects.

14914. You have great experience on these subjects, and I should like to know what your opinion is on another question connected with that point. We have been told by more than one witness, I think, that the curriculum for teachers in training is already so crowded that it is absolutely impossible to add any additional subjects, and that if you were to give them training in agricultural topics you would have to knock something else out. Do you think that is the case?—I am afraid, so long as their training is limited to two years, there is a great deal of truth in that. I think if you could give them an extra year on topics of this kind, at an agricultural college especially, you would produce a class of teacher who would be extremely valuable. That was one of the subjects we proposed to the Board some years ago. I was the chairman of the Departmental Committee a few years ago, which inquired into the curriculum of the training colleges at the request of the Board of Education, and we did succeed, I think, in getting elementary science adopted as a permanent integral part of the curriculum, so that every teacher ought to know something of nature study and a little of natural science. That previously had been an optional subject. Then we recommended that among the extra optional subjects which are taken up by many teachers should be included one which might be called rural subjects. We drew up a short syllabus of it, and any teacher passing in that subject would get a mark of distinction, and would be known afterwards as having some special knowledge in that class of subject. I believe that still is in the training college syllabus. I am not quite sure, because it has been so often altered; but it was a short time ago. Very few teachers take it up, however, the main reason being, I think, that it is not sufficiently recognised by the local authorities as a subject for which they ought to pay a teacher extra, and not only that—I am speaking now of elementary school teachers—teachers who are trained in Government colleges do not like labelling themselves as rural teachers; most of them desire to go into big towns to begin with. They think they will get higher salaries, and they know they will get advantages, social and otherwise, which they will not get in rural districts.

14915. I have ventured in several cases to allow this subject to be touched upon because so many of the witnesses have pressed upon us, and I think you seem to agree, that it is absolutely necessary, if you are going to have intelligent agriculturists, that they should have some agricultural teaching in school?—Of course you would have to equalise the salaries both in town and country.

14916. That would be very costly?—No doubt, but it is done in France.

14917. (*By Mr. Medd.*) Do you not consider that such training as is useful for rural teachers is equally useful for urban teachers and has a right to form part of the general curriculum—in fact, it does to-day?—I think it would be an advantage to any teacher to know those subjects, but of course the time for training is limited, and if a teacher wants to be a specialist in another branch he cannot be a specialist in rural subjects.

14918. What I mean rather is this, that there is no valid excuse for saying that any pupil teacher should not be acquainted with the common phenomena of nature?—No, and I should hope that under the new system of training pupil teachers in secondary schools that they will all get some acquaintance with natural science and nature study.

14919. You know probably better than I do the provisions in the latest regulations for the training of teachers?—The last only came out yesterday.

14920. Then it would be the one before that because I have not seen that one?—I know there are excellent opinions and exhortations in all those.

14921. In the memoranda of the Board itself there is nothing to prevent the teacher who is to be an urban teacher from acquiring just that type of instruction which we want in the rural teacher?—There is nothing to prevent him but there is not much to encourage him.

14922. (*By Lord Barnard.*) I do not know whether you have ever heard it, I certainly have never heard any suggestion made to the effect that urban teachers would not receive benefit from a training in rural subjects. I have never heard that suggestion made anywhere and unless it has been made it seems to me we are fighting the air. Have you ever heard such a suggestion?—I have heard objections on the ground of time in taking up such subjects.

14923. Yes, but not with regard to the merits?—What you really want is a direct inducement to teachers to take them up.

14924. You are intimately acquainted with the Agricultural Education Committee?—Yes, I was one of the original promoters of it and acted as honorary secretary throughout its active existence.

14925. Would you like to direct the attention of this Committee to the report of that committee. Is it still in existence?—It is not in active existence. I could state shortly what the objects of that committee were and our main lines of action.

14926. If you please.—The objects of the Committee were stated to be two, first to secure systematic and efficient instruction, both theoretical and practical, in agricultural subjects suitable to every class engaged in agriculture, and, secondly, to diffuse among the agricultural classes a more thorough appreciation of the advantages of instruction bearing directly or indirectly on their industry. Of course, that was a very large programme. We first took up the subject of the elementary school and there we endeavoured, and successfully endeavoured, to get a block grant given which left the teacher free to develop such subjects as might be most suitable in the country districts as well as in the towns. We got the block grant after a good deal of negotiation in, I think, 1901. Then we got included, it was largely due to our representations, among the ordinary subjects of the curriculum what is generally known as nature study and under that may be taught any subjects bearing on country life. I believe that is done in a great many schools at present. That could not very well be done until we had got a block grant system. Then going on to the secondary schools we endeavoured to get a special course in rural science recognised by the Board—it was then at South Kensington—and we got that put in. Sir William Abney was very helpful on the subject, and it was a practical course such as I have described at some of these Somerset schools. It was the same kind of course but, unfortunately, it has disappeared from the secondary school regulations now owing to the much greater freedom that is given to all those schools now to teach what they like, and there was no need, I suppose, to keep any very special course, and the record of it, therefore, has disappeared, which is rather unfortunate, because it formed a sort of model course for the secondary schools in the country districts. There were also courses drawn up by us for the nature study teaching in the elementary schools, so that we set the ball rolling in both those respects. Then we endeavoured, as I think I have told you, to get the curriculum of the training colleges altered and through that Departmental Committee, we did something with regard to that. We communicated with all the local authorities who were then some of them rather at a loss how to spend some of their technical instruction money, and we sent them all kinds of suggestions as to how it could be best spent on agricultural objects. I dare say that did some good: I am not prepared to say how much. Then the other class of our work was still more difficult: it was to diffuse among the agricultural classes a more thorough appreciation of the various forms of instruction. I had several pamphlets written by authorities on agricultural education and published in a large number of newspapers all over the country. I think 40 or 50 local newspapers published them week after week and in that way I suppose we did something to influence public opinion. Of course we had not at our disposal funds to carry on a great lecturing system, and we had to suggest that to the local authorities to carry out, but in all those ways we attempted to bring the agriculturist more into contact with scientific education, and to provide more suitable education for him. Our work went on for three years. At the end of that time the Act of 1902 was passed and I and most of my

Rt. Hon. H. Hobhouse.

11 July, 1907.

14926a

Rt. Hon. M.
Hobhouse.

11 July, 1907.

colleagues were so overwhelmed with other kinds of work that we had to drop that particular work which then, in my opinion, became the work of the central department. We did our best to get the Board of Agriculture and the Board of Education to co-operate on that subject, but I cannot say it was altogether crowned with success.

14927. You have familiarity with Government departments generally, I think?—From the outside, as a Member of Parliament: I have never been inside a Department officially.

14928. Do you know an instance of any Government departments co-operating? I was 10 years in a Government department and five years of that time I was Secretary to the Chief, and that led me into a great many Government Offices, and I cannot call to mind any instance where two Government departments were in any way concerned with one subject?—I could not tell you without some thought. This was a subject which so intimately concerned both departments. Perhaps I might add, as bearing on your question, that our committee felt the great difficulty of co-operation between two different departments so much that, in the first instance, we proposed that the whole of the agricultural work should be transferred to the Board of Education in the first instance. Mr. Hanbury entirely rejected the idea, and we found it was not very acceptable to the agricultural classes. We dropped that, therefore, and then we suggested among other things that there should be some joint committee formed at head-quarters to deal with those subjects, on which both Boards should be represented. I do not think that was ever carried out.

14929. Would you like to express an opinion on that subject now as to what your views are on that point. I must assume, of course, that if the Government has to provide funds that those funds must be administered subject to the supervision of some Government department?—I still think it is most desirable that the two departments should work in close co-operation because after all you cannot divide education into water-tight compartments. For instance, you have the connection between the rural instruction in secondary schools in country districts which ought to bear more or less on the instruction which is given in higher institutions of an agricultural character, and if you have one supervised and inspected by one department, and the other supervised and inspected entirely by another department, you will never get thorough co-ordination.

14930. I should like to ask you one question with regard to fisheries. I do not know whether you take any interest in fisheries?—We are not a fishing county.

14931. The Armstrong College at Newcastle have now commenced marine work, and have got a marine laboratory at Cullercoates, partly through the munificence of a gentleman who is interested in the subject, and partly through the efforts of some of the professors and teachers in the college. Would you suggest that that work should be supervised by the Board of Education rather than by the Board of Agriculture and Fisheries, merely as a test?—I should not think that that was a branch of work that the Board of Education could take up usefully, but really my opinion on fishery questions is worthless, and I would rather not give evidence on it.

14932. It is rather on the principle as to which body should take up and carry out research work?—If there was a joint committee I should have thought that it might take a general supervision of all that class of work. I believe there is a body in Ireland which does that. Those who are best qualified upon the committee to deal with research work would deal with research, whilst those members best qualified to deal with the curricula of the schools would take that branch.

14933. You think there should be co-operation?—I think it would be most valuable from every point of view. There is nothing more trying to local authorities than to have to deal with two different Government departments about the same thing, or substantially the same thing, and finding them take different views.

14934. In shadowing forth the idea of a joint committee or council appointed by the two Departments, would you suggest that there should be outside members on such a Committee?—I think we suggested that there should be some advisory body, not an executive body, with which such a Joint Committee might take counsel. I believe they have something of that kind in Dublin.

14935. We have had that suggestion made by two or three witnesses, and I understand you would approve?—Yes, but, I think, such an advisory body ought to contain both agriculturists and educationalists.

14933. Do you think that representatives of every county should be included in such a body?—Not necessarily; that might make it too large.

14937. I understand you have always considered that the Government should have taken a more active part in establishing first-class institutions for the teaching of scientific agriculture?—I think there was a time when much more progress might have been made in agricultural education if the Government had acted more boldly in taking, what I may call, central action, instead of leaving the disposition of the "whisky money" entirely to the control of the local authorities. A great opportunity was then lost of establishing really first-class institutions for the teaching of scientific agriculture, as has been done in many foreign countries. Now, of course, these funds could not be withdrawn as they have been entirely appropriated, mostly to non-agricultural objects. Unless further funds were provided I am afraid that in many parts of England, and certainly in my part of the country, it would be difficult to establish first-class agricultural education institutions. The Government might, however, find funds in a small way as they did lately in the case of the National Cider Institute, and could take the lead in getting counties to combine. I think something might still be done in that way.

14938. You think there is great scope for the Government to take the lead and to advise, especially in the work of co-ordination?—I think local authorities are always glad to have a lead in the right direction from Government departments. They object strongly to minute regulations, but that is quite another thing.

14939. They want rather a lead and advice?—Yes.

14940. I think your evidence on that point agrees with that of several witnesses, who have suggested that the Government should be the moving spirit in the work, but that the actual administrative work, such as the appointment and payment of all teachers and officials, &c., should be left to the local authorities?—Of course, if the Government contributes largely to an institution it would have a perfect right to a voice in the principal appointments.

14941. You think it should have representatives at all events?—Yes, as in the case of the Cider Institute, where they have a voice in choosing the directors, &c. That Institution is working very well and it is carried on by a combination of several counties under Government guidance.

14942. I suppose you think the work should be more co-ordinated than at present. We understand that there is a good deal of overlapping in experimental work, and it has been suggested that the Government might give its grant on condition that it is informed what work each institution would take up, and in such case that overlapping might not happen?—I think there is a good deal of waste of money in experimental work. On the other hand, it must be remembered that sometimes seeing is believing, and if you can have demonstration plots and that kind of thing, they do good locally.

14943. We have had a clear line of distinction drawn between experimental plots and demonstration plots; the latter are intended to demonstrate known facts and the former to ascertain new facts?—Yes.

14944. Many farmers seem to think that the more demonstration plots there are the better?—Yes, provided they are conducted on scientific principles. I think some money is wasted now owing to the way in which they are conducted. A good deal depends upon how the county instructor advises and lays out the experiments. Some of them seem to be rather worthless. There is need for good scientific supervision in order to make them thoroughly useful; for instance, a Government inspector might go round and inspect the conditions under which the experiments are carried on, and if he points out what are known to be fallacies he will be doing good.

14945. (By Mr. Latham.) You made some allusion to the feeling of farmers against scientific teaching. Don't you think that largely comes about through not having the right man to carry on the instruction?—Yes, no doubt that is often the case.

14946. So that after all the fault is not quite so much with the farmer?—I don't blame the farmers much. They are practical men and look at things from a practical point of view.

14947. My experience goes to show that if you have as lecturers sound men who are practical and also scientific teachers their work will be appreciated?—Yes, probably, but farmers are very severe critics of lecturers.

14948. (*By Lord Barnard.*) I have been rather led to believe that the prejudices of farmers can be removed, and, in fact, are being broken down?—Yes, and I hope that with the more scientific education now given to farmers' sons a great deal of the remaining prejudice will disappear.

14949. In course of time the supply of competent and suitable teachers will no doubt be increased, and experience will be gained not only by teachers but by county authorities. In fact, do you not agree that the facilities given have not yet been long enough in operation for them to acquire a definite and final form?—I hope we shall improve as years go on, but I certainly think that parts of the country require a stimulus from headquarters.

(*Mr. Medd.*) I am not a farmer or a teacher, but I have addressed many meetings of farmers in different parts of Gloucestershire and Cheshire; and I have always found their desire was to profit as much as possible by any good teaching they could get.

14950. (*By Lord Barnard.*) Are you in favour of winter schools?—Yes; I think they would do a great deal of good.

14951. In what sort of buildings would you hold them: would you hold a winter course in an existing building?—Yes, if you can get a suitable building. I presume there would have to be some apparatus for teaching science.

14952. Would you contemplate the erection of a winter school?—I should hope it would not be necessary to build. The less money you spend on bricks and mortar the better.

14953. Are there many small holders and small occupiers in your county?—Yes; we have a certain number in Somerset, but we have also a large number of big farmers.

14954. Can you treat both classes together, or should they be separately dealt with?—I don't see why both classes should not attend lectures or go to winter schools together, but I think you may find that the larger farmers' sons are less keen about attending these courses than those of the smaller holders would be. I might perhaps here be allowed to add that I think something might be done to promote co-operation in this matter between the agricultural societies and the local authorities.

14955. Are the agricultural societies in Somersetshire societies in anything beyond the name, or are they simply bodies for running an agricultural show?—Many of our societies merely run a show and do nothing else. Others do more. My Agricultural Committee gives some of them grants for holding demonstrations in milk testing or for giving lessons in hedging, ditching, shearing, &c. A good deal of that kind of work may be done through the instrumentality of the local agricultural societies.

(*Mr. Latham.*) I think societies do not undertake this work as a rule not because they do not wish to do it but because of the difficulty often experienced in getting thoroughly qualified instructors and lecturers in whom the farmers can have thorough confidence.

14956. (*By Lord Barnard.*) Do you consider instruction in poultry keeping of value?—Yes, it is popular in my county.

14957. Would you say the same of bee keeping?—I should think that would be valuable also for certain classes of people.

14958. We have had very opposite opinions expressed by some witnesses on that subject?—I think it is a branch of horticulture and probably valuable not so much to the farmers as to the cottagers.

14959. (*By Mr. Latham.*) A witness to-day has told us he has little doubt that in many instances bee keeping is productive of produce—increases the production by fertilising the soil?—I am not scientific enough to say whether that is so, but I suppose there should be a certain number of bees in a well regulated garden.

14960. You said it was more a cottager's question?—I meant because farmers do not as a rule keep bees.

14961. But do you not think they ought to do so?—The farmers don't care much for *petite culture*. They have so much to do in the larger branches of husbandry.

14962. The bee keeping is usually managed by a farmer's wife or daughters?—No doubt.

14963. (*By Lord Barnard.*) Have you considered the subject of farm hygiene?—I assume you mean by that the health of the animals on the farm.

14964. Yes, my question would include that?—Yes, it is a proper subject for an agricultural instructor. We do give some lectures on these subjects.

14965. Are the lessons in farriery considered of importance?—They may be very useful.

14966. That is a manual process?—Yes.

14967. Have you school gardens?—Yes, we have had school gardens in connection with our evening schools for some years at certain centres. They have answered extremely well and now we are starting a system of school gardens in connection with our day schools. Some of the secondary schools have them.

14968. You think that sort of thing ought to be extended?—Yes, it would be useful to every class.

14969. (*By Professor Middleton.*) I understood you referred to the apathy of the farmers?—I did not use that word.

14970. Perhaps I put it a little too strongly, but I understood you to say they do not quite appreciate the agricultural instruction?—Not certain forms of it.

14971. So far as I could gather they appreciate most forms of it except the teaching of agriculture proper. For instance, they appreciate lessons in dairying, &c.?—I have often heard the remark made that a school is not the place to learn agriculture, and to some extent I agree with that view.

14972. I gather from the general trend of your evidence that you think you would probably have done better in the West of England if you had started with a central institution?—I do, because from that central institution it would be comparatively easy to take up other branches of work.

14973. You expressed the opinion that Government should have taken a more active part in establishing first-class institutions for the teaching of scientific agriculture. In using the word "Government" in that connection do you mean the Board of Agriculture?—That would have been the natural department to take it up, but in order to do so they would have needed some of the "whisky money" or other funds.

14974. The money was granted to the County Councils and then the Board of Agriculture, without sufficient funds, was left to look after agricultural education?—I think it was a great opportunity lost.

14975. I suppose you now recognise the fact that unless further funds are made available we are not likely to be able to effect much, even if we have an advisory committee, and even if our system were perfect, without funds we are not likely to get much further forward?—Much more weight is given to the advice of a Government department if it is accompanied by a promise of funds.

14976. With regard to scholarships I understood you to say that you had a complete system of general scholarships in Somerset—what are called major and minor scholarships?—We call them junior, intermediate, and senior scholarships.

14977. Are these open to all boys who belong to the county or who have lived there for a certain number of years?—That is not quite accurate. Our junior scholarships are confined to boys from the public elementary schools. The intermediate ones are partly open and partly confined to the same boys in the secondary schools, and the senior scholarships are open to all boys residing in the county.

14978. Boys possessing the senior scholarships can, I suppose, go to any approved institution?—Yes.

14979. These scholarships are, of course, available at any agricultural college which the holder chooses?—Yes, if it is an agricultural college of a high enough type, but as a rule the holders of the scholarships do not choose agricultural colleges.

14980. I think you referred to the lack of co-operation between the Board of Education and the Board of Agriculture. I should be glad personally to promote such co-operation, and I should like you to explain a little more fully in what ways you think there has been lack of co-operation?—I am afraid I am not prepared just now to go into all the history of the matter.

14981. But you might indicate in what respects the lack of co-operation shows itself?—When my Agricultural Education Committee was formed we felt it was desirable to introduce a more agricultural or rural element into education in the county districts, but the question arose, who was to do it. We found that the Board of Education then had no agricultural element in it, whereas the Board of Agriculture had nothing to do with any kind of education that was not purely technical. It seemed to us that the only way to achieve our object was by means of some

Rt. Hon. H.
Hobhouse.

11 July, 1907.

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 11 July, 1907.
 co-operation between the two departments. We suggested the formation of a joint committee for such subjects as drawing up a rural course for the secondary schools or securing adequate inspection in the more agricultural subjects. We thought such co-operation might be useful.

14982. No doubt you are aware that the Board of Education have now appointed an agricultural inspector?—Yes, one, a most excellent man, but he cannot do all the work that is necessary.

14983. And the courses of study have been remodelled very much in accordance with the recommendations which I think your Committee suggested?—Something has been done in that way, but if further progress is to be made I think that the agricultural element in the Board of Education will have to be still further strengthened.

14984. But what has been done does not seem to imply any lack of co-operation. I understand you would agree that the line of development is right, but you think the Board of Education have not yet gone far enough in appointing a sufficient number of inspectors?—I think they ought to enter into consultation more with the central authority on agricultural subjects.

14985. No doubt the Board of Agriculture was consulted in regard to the appointment of an agricultural inspector?—Yes, but I think the departments might co-operate more upon such subjects as the regulations drawn up for secondary schools, &c., but I don't wish to speak with any great authority upon that subject.

14986. You referred to the fact that local authorities do not like dealing with two departments. Of course I can quite see that it would save some trouble and be preferable to them if there was only one department to deal with, but the question is whether a single department would be an advantage from the purely educational point of view?—It is very distracting to educational administrators if they are pressed from one side by a purely educational authority and on the other side by a purely agricultural authority. There are branches of work in secondary schools that require the supervision of persons versed in the subject from both sides, and though it is quite true that there is one inspector in agriculture now appointed by the Board of Education, I don't think he weighs as much, so far as I know, in the allotment of grants, &c., as do the ordinary inspectors of the Board who know little or nothing about agricultural work.

14987. (*By Mr. Latham.*) I am rather disappointed to hear you say that the agriculturists in your districts are rather against receiving instruction in their business. I happen to have had a great deal to do with the Bath and West of England district, and I understand that in some directions you were rather pioneers?—I excepted the dairy industry.

14988. When classes were started in Somersetshire, were they not taken up well?—They were taken up well in the cider industry; poultry was also dealt with rather successfully.

14989. Is there not a good deal of research in connection with the Bath and West of England Society, indeed one of the best essays on cheese-making—that of Mr. Lloyd—came from your district?—Mr. Lloyd does not live in our district.

14990. He wrote it upon the evidence he got from the Somerset Cheese School?—That is a flourishing institution.

14991. If all these efforts have been so far successful, and if the farmers appreciate them, don't you think they would also appreciate education of a scientific character placed before them on similar lines?—I hope they may still do so, but we have not hitherto found our lectures very successful.

14992. With reference to the remark you repeated that the school is not the place for learning agriculture, with which I agree, is it not a fact that the college or school must be the place for acquiring a scientific education?—I quite think so.

14993. If you had something of the sort in your district, would it not be a great advantage to the district?—I have always thought so.

14994. Do you think the farmers would be against it?—I don't think they would be in favour of spending any large amount of county money upon it. I may be wrong, but that is my impression.

14995. If we could get a considerable Government grant, could you not also find some local funds?—I think we should be more likely to get money from the county ratepayers if there was a promise at the same time of a substantial Government grant.

14996. Do you agree that the money now expended on agricultural education in this country is too meagre?—

Yes, upon certain branches, the highest branches, of agricultural instruction.

14997. With reference to the differences of soil, and even of climate, do you not think that if the experiments were carried out upon a wider scale and upon broader lines, they would create more interest?—Possibly so; there are manuring experiments carried out in different parts of the county which excite some interest.

14998. Are they not rather meagre?—Yes, and I have always felt that we could not do much more without a central institution, but practically that kind of work is now left to the Agricultural Instruction Committee, the majority of whose members are practical farmers.

14999. Does the expenditure of £2,500 a year include all the agricultural teaching?—Yes, all the purely agricultural instruction, but the same class who take advantage of it can get their share of other branches of our educational work. They are not debarred from going to our secondary schools or evening schools, or from our ordinary scholarships. If we could have an institution like the Reading College in our midst, I should be glad to promote it, but that requires the co-operation of different counties.

15000. You remark that a distinctly rural character is sought to be given to three of your secondary schools by a special annual grant in consideration of the governors providing gardens and experimental plots, and special science teaching bearing on agriculture; so that you really do encourage the teaching of agricultural science in these three schools?—Yes. I may explain that we started that at my suggestion at a time when South Kensington held out special inducements for that kind of work, and one of the conditions we made was that the arrangement was not to be interfered with without the consent of the Education Committee. No objection has so far been taken to it, but whether it is warmly approved or not I am a little doubtful.

15001. Do some of your scholarship holders go on to Reading?—Yes, we have one scholar at Reading now.

15002. Did I understand you to say that they could not stop there after 18 years of age, because I did not know of such a rule at Reading?—I did not say that with regard to Reading generally, but I don't think our scholarship carries him beyond 18.

15003. Then the limit of age is at your end of the arrangement?—Yes. Scholarships are awarded at a certain age and are tenable for two years.

15004. If a boy shows special scientific aptitude, could he not go on longer and further?—In special cases we might give the necessary grant to continue a very promising boy who was working for a degree. I have already explained what we have endeavoured to do with regard to the secondary schools, we cannot make them all agricultural, but we have picked out three to which we have tried to give a special agricultural character.

15005. (*By Mr. Medd.*) Does that include a girls' school?—No, there is also a girls' school, but I would not call it agricultural; it is rather horticultural, and I think there should be horticultural teaching given in connection with every school.

15006. Is there a demand for more money for agricultural education?—If more money is given, it ought to be given to the higher forms of agricultural instruction, which are most likely to be neglected in the counties, I think that is what the Government ought specially to encourage.

15007. (*By Mr. Latham.*) I am afraid that would rather shut out the small farmers?—The clever sons of any class of farmers might very well take advantage of it.

15008. My experience does not show me that as a rule the clever men come from the class of small farmers?—We have had some remarkable instances of clever boys from every class.

15009. You suggest liberal grants to winter schools conducted upon thoroughly efficient, but not scientific lines?—Not highly scientific. What I meant was that the winter schools, if they are to attract the young farmers generally, should be of a practical character. There must be some science, but they should not be purely scientific. If young men have been on the land for several years, I do not think they will have much science.

15010. Is there not a good deal of science in the adaptation of certain manures to particular classes of land?—That is applied science.

15011. Are there not great mistakes sometimes made in the application of certain manures to unsuitable land? And would it not be an advantage if young farmers could have some education in that respect?—I agree.

15012. Lord Barnard made a remark with regard to draining which we were told by one witness is a landlord's job, but, if that is so, does not the landlord generally employ his tenants to do it, and on that assumption do you not think that draining is an excellent thing to be taught?—I think the principles of draining should be taught.

15013. Does your Committee give prizes for rick building, ditching, hedging, etc.?—I think we allow certain prizes at the end of the course.

15014. Do your teachers go out to demonstrate upon those subjects?—We have done that, but now we leave it pretty much in the hands of the Agricultural Society to carry out. We give them a grant, and they make their own arrangements.

15015. (*By Mr. Medd.*) I hand you a copy of the resolutions of the Agricultural Education Committee. I questioned Sir Thomas Acland upon them, and he agreed with them with the exception of No. 5, which he objected to on the ground that a permanent demonstration station in each county would be useless, because of the differences of climate, temperature, etc. in particular areas. How far would you regard these resolutions as affording a practicable policy?—I have dealt with most of them already in my evidence.

15016. But, taking them as a whole, do you approve of them?—Generally speaking I do.

15017. Is it not the essential point to begin with that there should be absolute co-operation between the Board of Agriculture and the Board of Education?—I think that is most important, taking the word education in its widest sense.

15019. Differentiating education from instruction?—Yes.

15020. Professor Middleton seemed to imply that there had not been any obvious lack of co-operation?

(*Professor Middleton.*) So far as known to me.

15021. How would such a course as this recommend itself to you, that the central authority should annually appropriate a sum to each county for agricultural purposes, earmarked for such purposes, instead of leaving each county to appropriate as much as it likes of the "whisky money" for agricultural purposes?—I don't think it would be wise to let the counties off without contributing out of their own funds to such purposes.

15022. The distribution from the central authority might be made to depend upon a contribution locally of an equal amount?—I think you must make some condition of that kind in any central grant.

15023. At present nothing is earmarked for agricultural education purposes, except the small amount given by the Board of Agriculture to particular colleges, and therefore those parts of the country which have no institutions of that kind cannot get in because they have not locally the money necessary. My object would be to enable the Board of Agriculture to allocate larger sums annually to each county for agricultural purposes, one condition being that an equal sum should be contributed by the local authorities?—I think such grants should be confined to those higher branches of agricultural instruction which counties have in many cases shown themselves backward in supporting.

15024. The final object of this Committee is to obtain more money for the purposes of agricultural education and to show how it can be usefully appropriated. It seems to me that one of the most feasible schemes is for the Board of Agriculture to have allotted to it by the Treasury a fixed sum for agricultural education, which it distributes to the various counties according to their size, population, etc., upon condition that an equal amount is contributed locally?—Yes, but I think it should go further than that. If you give a substantial grant to a county you might do it on condition that they submit a scheme which can be approved by the central authority and you should take care that the scheme provides for a sufficient support of the highest types of agricultural instruction.

15025. Subject to these conditions, would you think such a plan as I suggest feasible or desirable?—It is feasible, if you can get the money from the Treasury.

15026. Would you as a chairman of a county council object to submit a scheme for the agricultural education of your county to the Board of Agriculture annually?—On consideration of receiving a liberal grant. Putting, aside all prospect of a Government grant, I should have no objection as the head of a county authority to consulting the central authority; but I should object to be absolutely bound to obtain their approval of our scheme of work, for I think the county authority ought to have as free a hand as possible in administering the county funds.

15027. But the money is not always expended to the best advantage?—Still, you must have regard to local feeling in administering local funds.

15028. I do not suggest that the Board of Agriculture should control your scheme or have even any absolute power of revising it, but you might submit it for advice and consideration?—I would have no objection to that.

15029. Would you be in favour of a consultative committee in London, including representatives of groups of counties and great agricultural societies?—I have already said that an advisory committee would be useful, provided that there were central funds to distribute.

15030. But irrespective of funds?—Then I don't understand what they would consult about.

15031. About the formation of schemes, for instance?—I have already said that I don't think the schemes ought to be subject to the absolute approval of the central authority unless it contributes funds.

15032. Might not such a committee be useful in regulating the relationship of different counties and bringing pressure to bear on the Board or upon the Treasury?—I don't think it would be worth while setting up such a committee unless there were more funds to distribute, but I have not thoroughly studied that point.

15033. Are you aware that there has been a project for converting Cirencester into a collegiate centre?—I have heard so.

15034. And of making Bristol or Oxford or both into collegiate centres?—I have heard that.

15035. Do you think Somerset would be inclined to co-operate?—Personally I should be inclined to co-operate, but I cannot speak for my Committee without consulting them.

15036. (*By Lord Barnard.*) You expressed an opinion that the county authority should have the sole control of spending county money, but what we had in contemplation was that the county authorities might have the spending of some national money as well. Would you object in that case to some degree of central control?—I should not.

15037. In the same way as in the case of elementary education?—Personally I should advocate any new national grants for agricultural instruction being administered under the control of a central authority.

15038. The idea put forward by some witnesses is that it should be administered by local authorities, subject to a certain amount of central control, in the same way as the elementary education grants?—Yes, under some degree of control from a central body, but that answer does not apply to the funds that are now actually being administered by the local authorities, which they rightly regard as their own.

15039. (*By Professor Middleton.*) Has the County Councils Association which you represent considered at any time the expenditure made by the different counties under the various headings of agricultural education?—No.

15040. You are not in a position to give the views of the Association upon the expenditure of the different counties?—The Association has no collective views upon that.

15041. There is no criticism by the Association of the expenditure of different counties?—No; the Association is not in a position to criticise that.

(*Lord Barnard.*) Thanks for your evidence.

TWENTY-NINTH DAY.

Tuesday, 16th July, 1907.

PRESENT :

The Lord BARNARD (*in the Chair*).

The Lord BELPER.
Lord MORETON.
Mr. F. D. ACLAND, M.P.
Mr. DAVID DAVIES, M.P.
Mr. THOMAS LATHAM.
Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.
Professor W. SOMERVILLE, D.Sc.
Mr. H. S. STAVELEY-HILL, M.P.
Mr. A. E. BROOKE-HUNT (*Secretary*).
Mr. H. L. FRENCH (*Assistant Secretary*).

Dr. WM. SOMERVILLE, Professor of Rural Economy, Oxford University, examined.

Dr. W.
Somerville.
16 July, 1907.

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15042b

15042. (*By Lord Barnard.*) Will you kindly give the Committee such information on the subject of agricultural education as you think will be useful to us?—I propose to confine myself entirely to giving a brief outline of the present position of affairs at Oxford. I can, of course, supply information with regard to other departments with which I have been associated if desired; but that is a matter for the Committee to question me about.

The so-called work of agricultural education, and education in rural economy at Oxford, centres round a chair that was established in the year 1796 by the then Professor of Botany in Oxford, Dr. Sibthorp, who in that year bequeathed to the University an area of land for the endowment of a chair of rural economy. At that time I believe the income from the land was approximately £200 a year, and the income was fairly maintained at that level until the depressed times of the late seventies arrived. Since then I think that the clear income from this endowment has probably not amounted to more than about £120 a year. From the time of the establishment of the Sibthorpean Professorship in 1796 until 1884 the chair was pretty well amalgamated with the Professorship of Botany, and was never held independently by anyone until 1884, when Sir Henry Gilbert was appointed Sibthorpean Professor of Rural Economy. What exactly happened before that time I have not been able to ascertain. I doubt if any special lectures on rural economy were ever given until Sir Henry Gilbert took up the work in 1884, and held the post for two periods of three years each, resigning in 1891. He gave courses of lectures, chiefly, of course, concerned with the results obtained experimentally at the station at Rothamsted. Then from 1891 to 1894 the chair was filled by no one; the income during those years, I believe, being appropriated for the maintenance of the farm buildings, and for the provision of some necessary improvements on the estate. In 1894 the University proceeded to make another appointment, placing Professor Warrington in the chair. He held the appointment also for two periods of three years each, resigning in 1900. After 1900 nothing was done until 1906, when I was appointed to the professorship. Practically that is all that occurred down till the present time; but in 1891 the Hebdomadal Council, taking note of the revival in agricultural education that was then present in the country, appointed a committee, the terms of reference by the Hebdomadal Council to the committee being to consider in what way the University could assist in the establishment of agricultural education with a view to the needs of county councils. That was practically in the first year of the work entrusted to county councils under the Local Taxation (Customs and Excise Act) of 1890. This Committee, appointed on April 27th, 1891, reported on June 18th of the same year, and they recommended that specialised agricultural teaching should be started in the University of Oxford, and that the existing science courses should be utilised as a foundation on which this specialised

instruction should be based. They proposed that the emoluments of the Sibthorpean Professorship should be somewhat increased, and that he should be provided with a technical assistant. However, although this was unanimously recommended, no action whatever was taken upon it, and, so far as I can learn, the reason that nothing was done was because at that time—namely, in 1891—the University was in considerable financial straits, and as the proposal involved expenditure of money, the University did not seem to see its way to proceeding with the work. I do not really see why this should have been a valid reason for doing nothing, because at that time, of course, other educational institutions that were undertaking agricultural work were being supported by County Councils, and were being placed in the receipt of grants by the Board of Agriculture. It seems as though the University at that time were taking a very despondent view of things in general, and did not appear to have heart to embark upon any fresh departure. Then three years later—namely, in 1894—a movement was made in a somewhat different direction, a joint committee being appointed, comprising representatives of the Oxford Delegacies for the extension of teaching outside of the walls of the University, and also representatives of the Royal Agricultural Society of England, and the Royal Horticultural Society, and representatives of the University College of Reading. That joint committee still exists; it has for its chairman the Dean of Christ Church, and its duties or functions comprise the examination of candidates for diplomas in agriculture and horticulture, and the granting of such diplomas. That brings us down to the year 1894. Then in 1898, when Professor Warrington was the incumbent of the Sibthorpean Chair, a proposal came before Congregation, having for its object the establishment of a so-called Honours School in agricultural science. The matter was debated in Congregation on May 17th, 1898, and met with considerable opposition. The opposition took mainly four forms: firstly, that this proposal was in response to a demand from without and not from within the University; secondly, that the University did not provide all the teaching that was necessary for the school, and that candidates would have to resort to some outside institution—namely Reading in this case—in order to obtain the necessary technical instructions; then, thirdly, objection was made to the effect that certain members of the Board of Studies in charge of the examinations need not be members of the University of Oxford. That appeared to be a departure from precedent, and did not commend itself to many members of Congregation. The fourth objection was that the degree obtained by successful candidates in this proposed honours school of agriculture would be in the nature of a technical degree, and many of the members of Congregation looked with disfavour upon anything in the nature of a technical degree. The objectors prevailed, and the grace was rejected by 47 votes to 45, a majority, namely, of two against it. Nothing further

Dr. W.
Somerville.
—
16 July, 1907
—

was done until 1905, when Oxford was charged with the education of the selected probationers for the Indian Forest Service who had been transferred to Oxford at the time the Royal Engineering College at Cooper's Hill was closed. The University of Oxford, in order to provide for the instruction of these probationers, agreed to re-constitute the Sibthorpe Professorship. The College of St. John's came forward and augmented the stipend of the professor by £600 a year, and subsequently associated the professorship with a fellowship in that college, and they promised to undertake the erection of a laboratory with the necessary class-room accommodation. That laboratory was started in the autumn of 1906, and at the present moment the first instalment is practically completed at a cost of £3,000. The college, although not obliged to do more, has, I believe, the intention of finishing this laboratory and class-room accommodation at a total cost of probably about £10,000. The duties of the Sibthorpe Professor, as amended by Statute in 1905, are defined to be the giving of lectures and instruction on the scientific principles of agriculture and forestry (so that agriculture is placed before forestry in the Statute), including the pathology of plants. Last year I took up the duties of this chair under the new Statute, and so far my work has been confined to giving instruction in the pathology of plants and in what is commonly called forest botany. In the spring of this year, after ascertaining to the best of my ability what the feeling of the University was as regards rural education in general, I sent a letter to the Vice-Chancellor, which he brought before the Hebdomadal Council, and as a result the Hebdomadal Council appointed a special agricultural committee, comprising, amongst others, the Vice-Chancellor, the Proctors and the Dean of Christ Church, who is the chairman of the joint agricultural committee for the examination of candidates, and for the granting of diplomas. The agricultural committee that was so appointed by the Hebdomadal Council recommended that the subject of rural economy should be included amongst the subjects for a pass degree, and that a diploma should also be granted in this particular subject. That was a unanimous recommendation by the agricultural committee. The Hebdomadal Council received this recommendation and considered it, and unanimously adopted it, and the agricultural committee are now charged with the duty of drafting Statutes and regulations to give effect to this suggestion that a degree and diploma in agriculture should be granted. In due course the Statutes and regulations will come before Convocation, and if they are accepted, then the degree and the diploma will be formally established. In this case we are not asking for an Honours School in agriculture, because we believe that those who want to study agricultural science in the most thoroughgoing fashion can best approach it through one of the existing Honours Schools in natural science. There are at present Honours Schools in chemistry, botany, physiology, geology and zoology, and we think that a man who has gone through one of those purely science schools has probably laid for himself the best foundation for the advanced study of agriculture. Besides the examinations for responses and moderations that all candidates for a pass degree must take, we suggest that this special or final examination for the pass degree in agricultural science would comprise a modern language, either French or German, and secondly some science subject, such as biology, or zoology, or chemistry or geology. It would comprise first of all this language, and secondly a science subject or a historical subject, so as to open the degree to those who had a disposition to study the historical developments of agriculture; or a legal subject, such as the law of contracts, or some economic subject; and, thirdly, the candidate would take what we call agricultural science, the scope of which has not yet been quite defined. That would be the course he would pursue; he must take a language, and he would require to take agricultural science, and for a third subject he could take a science subject, a historical subject, a legal subject, or an economic subject. Then as regards the diploma, the examination for that would be much more technical, and the course of study would extend over two years; but a candidate who was already a graduate of the University would probably be allowed to sit for and to secure his diploma at the end of a single year of specialised study. The subjects for the diploma would be the elements of general science, geology, chemistry, biology and the application of these sciences to agriculture, and also a certain amount of instruction in forestry up to the requirements of the English land owner or future English land agent. In approaching this subject, and in making these suggestions, the Hebdomadal Council, or rather this agricultural committee of the Hebdomadal Council, has been very careful, of course, to keep the fact in view that already in the neighbourhood there is a fully-

equipped agricultural department in the University College of Reading. The agricultural department of the University College of Reading, I believe, was partly designed to meet the requirements of the Oxford undergraduate. It was expected that the Oxford man, after taking two years or so in the University, would repair to Reading in order to go through special instruction in agriculture, but that hope has in no sense been fulfilled. There are serious difficulties, as anyone who knows Oxford must be aware of, in an undergraduate going to any other place of instruction than the University, and in point of fact after 12 years' experience of the agricultural department of the College of Reading, it has been found that not a single Oxford student has actually gone to Reading and has taken the diploma or certificate there. The Reading authorities, I believe, recognise that the agricultural department at Reading has practically no influence upon Oxford life, and I think we have it in evidence here from Professor Percival, the head of the agricultural department at Reading, that they there view with the utmost favour developments in the direction which I have indicated within the University of Oxford. This agricultural committee, as I have already pointed out, contains amongst others the Dean of Christ Church, and the Dean of Christ Church is the chairman of this joint committee, and he is entirely in favour of developments within the University of Oxford, and as he is the link between the University and Reading, it may be assumed that he anticipates no sort of injury to the department at Reading. If these developments that I have outlined should take place, naturally enough the University will require funds. The internal income of the department of rural economy at Oxford at the present time is practically £1,000 a year, but if we are going to undertake specialised instruction in agriculture and rural economy generally, we shall, of course, require to set up the necessary staff to do so, and I suppose that the expenses of the department will be something like the expenses at other analogous institutions, such as the University of Cambridge, or the University of Leeds, or the College at Wye; that is to say, we should probably be able to undertake this work if we had an income in addition to that which we already possess of something like £1,000 a year. I may say finally that if this department were started in Oxford it would not have anything to do with local agricultural instruction either in the county of Oxford or in any of the adjoining counties. That ground is already covered by the agricultural department in Reading, and I believe is covered with very great satisfaction to everyone concerned, so that the University would not in any sense propose to trespass upon this province of the University College at Reading; but it would, I trust, be of some service to agriculturists in the surrounding districts, in so far that the resources of the University, through its ample laboratories and scientific departments, would be prepared to undertake special investigations into agricultural problems and questions that might be concerning the agriculturists of Oxford and England generally. I think, my lord, those are briefly the outlines of the scheme that we have in view, and this is shortly a statement of the present position of affairs at Oxford.

15043. I do not quite understand about the diploma students. Do you anticipate that the ordinary undergraduates will become candidates for the diploma?—A certain proportion of them, we should hope.

15044. But do you anticipate that the ordinary undergraduates will become candidates, in addition to others who would be outside students?—When I say a certain proportion of undergraduates I mean that the diploma would be available generally for those who are members of the University of Oxford.

15045. A man to get the diploma would have to be a matriculated student, would he?—That is what we believe to be desirable. Of course, the regulations are not yet absolutely framed, but that is what we think is desirable. A man may become a member of the University of Oxford in various ways, of course, and amongst others he may be only a non-collegiate student, and there does not appear to be any hardship in demanding that a candidate for the diploma should, in fact, be a member of the University.

15046. You have not told us whether you propose to undertake much research work?—Yes, we should hope to do a good deal of research work.

15047. The department would be very largely for research as well as for teaching?—Yes, we must endeavour to carry on a great deal of research.

15048. Your object would be really to train highly scientific men to a great extent more than practical men?—I think we would be able to give the sort of education

15042 f

15042 g

Dr. W.
Somerville.
—
16 July, 1907.
—

that would exactly suit the requirements of the prospective English landlord, or of the sons of large tenant farmers, and also young fellows that were intending to be English land agents.

15049. Would the training be something analogous to the training in the law school at Oxford for future lawyers, because that, so far as my knowledge of it goes, is more an educational training than a training of any actual practical usefulness?—I believe that the future lawyer requires to serve his articles subsequently with a solicitor, or with counsel, as the case may be.

15050. What I mean is this, that the undergraduate who goes through the law school at Oxford would hardly consider himself competent to begin practising law as soon as he left the University?—As a matter of fact, he would not be allowed to.

15051. I mean even if he were allowed, he would not be qualified to do so, and I wanted to know whether the agricultural student who passed his degree would be somewhat in the same position?—Of course he would not be qualified practically. I hold very strong views indeed upon that point. I may say that the committee of the University that was appointed in the early nineties laid it down very clearly that the University could do nothing to train a man in the practical details of agriculture. They said: "It is obvious that every-day manual operations of husbandry, the knowledge of which can only be acquired upon the land itself, are not subjects of University teaching. It is equally obvious that the qualifications on which the successful prosecution of agriculture as a branch of commerce mainly depends—namely, practical experience, quickness of observation, knowledge of markets and prices—must be given elsewhere than at the University." And with that contention I entirely agree.

15052. Would you suggest that your legal subjects should include a practical acquaintance with the Agricultural Holdings Acts, for instance?—I should say certainly that a man who goes through the course in Oxford ought to be made thoroughly acquainted not only with the Agricultural Holdings Acts, but with all Acts and Regulations which concern the management of English land, with all the regulations, for instance, that are issued by the Board of Agriculture in connection with the Animals Diseases, the Fertilisers and Feeding Stuffs Acts and such subjects, and also the Regulations issued by the Local Government Board, which, of course, regulate the sale of milk and dairy produce.

15053. I do not quite understand the proposed history subject. Is that to study the past movements in land and agriculture, say, in the middle ages?—I may not have made it quite clear that history is an alternative subject.

15054-5. Quite so; but supposing a man did take that alternative, what would be the heads of the instruction?—I should say the history of land tenure and the development of agricultural tenure generally throughout the country.

15056. (*By Lord Belper.*) I think, as a matter of fact, the idea with regard to Oxford students, that those who intended to go in for agriculture should go to Reading for their agricultural education, entirely failed?—Yes, it absolutely failed; none have gone at all.

15057. What was the idea? When were they to go, in the course of the term or during the vacation?—I think the idea was that a man should go to Reading for his third year.

15058. And leave Oxford?—Yes, and leave Oxford entirely for the time being.

15059. And reside at Reading?—And reside at Reading.

15060. With regard to your suggested scheme now, you said a student must be a member of the University, that that was the idea, but that he need not be a collegiate student. What would his being a member of the University entail in the way of expenses?—I fancy that a member of the University may complete an academic year on as little as £120. I think £120 is generally taken to be about the minimum; but £150 is probably nearer the average.

15061. That includes his residence and keep, I suppose?—Yes, that would include maintenance and fees.

15062. Fees?—Yes, it would include everything.

15063. £120?—Yes, the fees would probably be about £16 a year.

15064. Do you mean the cost would be £120 irrespective of his residence and keep?—No, it would include everything.

15065. Not the collegiate students?—Yes, even collegiate students.

15066. I do not quite understand. Is there any definite arrangement made by either University for these extra non-collegiate students?—The non-collegiate students are a definite body of men who are not members of any college, but who are supervised by a censor.

15067. And who are members of the University?—Who are members of the University.

15068. That £120 would about represent the cost, including the fees, to a non-collegiate student?—Yes.

15069. (*By Lord Moreton.*) The Joint Reading and Oxford Board, to which you referred just now, in charge of the present diploma only works as regards Reading College, does it not?—That is so.

15070. What provision do you expect to have when the scheme which is being put in force is completed for practical demonstration?—I cannot say what will be the ultimate machinery. The College of St. John's have a great many farms in the immediate neighbourhood of Oxford, and that college has already indicated its willingness to hand over one of these farms to the department; but at this stage we have not gone very much into the subject; we have not discussed conditions or anything of that sort. My feeling at the present moment is rather in favour of having a first-class farm within three or four miles of the University, which would be run upon purely practical lines, which would not be encumbered by expensive equipment concerned with research, but which would endeavour to illustrate and demonstrate the very best principles of agriculture as applied in ordinary practice, and it would give an opportunity, of course, of showing young agriculturists how farm-books can be kept in a simple and yet thoroughly efficient manner, and would give them ample opportunity of becoming also acquainted with the ordinary practice of English agriculture in its best form. Probably in addition to that we should want, I think, some small area of land where we could do research work, the expenses of which, however, would be kept entirely distinct from the expenditure upon this practical farm that I have in my mind.

15071. Do the buildings now planned include ample accommodation for research work?—Yes.

15072. (*By Mr. Acland.*) Have you formed any opinion on the question of an alternative between the present system of the management of their estates by the separate colleges and the possibility of the management of all college property by a central body, such as the Ecclesiastical Commission, or on similar lines to the Ecclesiastical Commission, as affecting the possible relevance of your work?—I have not considered that large subject, I must say.

15073. Do you think that you are likely to be able to get what you want in connection with demonstration through colleges at present?—I should think so. The colleges, of course, own very considerable estates, and I should not think that any college would have any objection to making its books and accounts available for use in the agricultural department, and, as I say, one of the colleges would probably be willing to hand over a farm. I do not know that they would hand it over rent free, and in any case I do not think it would be desirable that the department should run a practical farm without charging itself with a substantial rent. It would defeat the object in view if, in fact, the department did not meet the ordinary expenses of a tenant-farmer, and there are, of course, as you can see, difficulties in the way of obtaining the capital for equipment. A 500 acre farm, thoroughly equipped and up to date, would require an expenditure, I suppose, little short of £5,000 of capital. We have not yet, as I say, gone into the details of the scheme, but I daresay these difficulties will be overcome when the proper time arrives.

15074. (*By Lord Belper.*) To follow up what I asked before, is your idea that this agricultural course would be taken up chiefly by those who are students—those who would go naturally to the University—or that it would attract others who had never been there before?—I should think that the bulk of the students would come from exactly the class that are at the University now. It would be very interesting indeed to get out statistics showing the percentage of students whose whole future will be concerned with the management, in some shape or form, of English land. What the number is at present I cannot say, but it must be a very large one. These men at the present time either go down without a degree or they take up a subject that is only indirectly connected with their future work. History, I believe, is a common

Dr. W.
Somerville.
—
16 July, 1907.
—

subject; but, at any rate, they very seldom indeed take science, and of course they never take agricultural science, for they have not had the opportunity; but when the opportunity is provided I should hope that a very considerable number of these men will be induced to study a subject that clearly has a closer bearing than any other upon their future work. The Dean of Christ Church says that he has men coming to him constantly and still more frequently, I believe, the parents coming to him, and deploring the fact that there is no specialised instruction in the direction that we are now considering.

15075. I quite understand your answer; but besides that do you expect that there would be any of the highest class of farmers who would send their sons to Oxford to get a degree in agriculture where they could get at the same time a good sound education?—I should think a very considerable number of the sons of tenant-farmers come to the University of Oxford now. I know they did at Cambridge. Professor Middleton will no doubt tell us specifically that a very considerable number did go to Cambridge, and no doubt they do go to Oxford.

15076. Successful farmers, who can afford to pay for their sons at a university?—Yes.

15077. This agricultural course would really be an advantage to Oxford in both ways, would it not, by reason of attracting some new students and giving a satisfactory course required by a considerable number of those at the University to take up a degree in agriculture?—That is our view.

15078. (By Mr. Staveley-Hill.) At the present moment you have not got any farm, I suppose?—No.

15079. There is no practical work done now?—No, there is neither theoretical nor practical work done in agriculture at present.

15080. It is a college with which I happen to be very familiar, St. John's College, which has provided the Chair of Agriculture?—Yes.

15081. That college has perhaps more facilities than any other, as they have large farms in the neighbourhood of Oxford?—That is so.

15082. What should you say as to the size of farm that you would require?—I think we would like a farm of about 500 acres.

15083. It is not suggested, is it, in the event of further development, that moderations and responsions should be altered. They would be a necessary part of the education in the first instance, would not they, before a student took up the agricultural education?—Yes. Of course Oxford, like Cambridge, contains a great many people who think that examinations should be altered, and no doubt an attempt will be made in the future, as an attempt has been made in the past, to bring them more into line with modern requirements; but for agricultural students we do not want to claim any special privileges or exemptions. We should all like to see moderations and responsions, or their equivalents, in Oxford and Cambridge modified, but we would not claim any privileges for agricultural students alone, and our view is that they should take their place in the educational machine, and should go through the same general sort of mill, other things being equal, as the ordinary students do.

15084. (By Professor Middleton.) Do you intend your diploma examination to consist of two parts?—Yes.

15085. Is the examination for a B.A. degree to correspond with the examination for Part I of your diploma?—No; it is different from yours in that respect.

15086. Will you require all students to pass Part I? Is that your intention, or will you excuse those who have taken an honours degree?—That is a detail that has not been considered, but I should be entirely in favour of exempting a man from, we will say, the chemistry of Part I, if he had already passed an examination in chemistry in an honours school. I am entirely in favour of exemptions; I do not believe in multiplying examinations unnecessarily, and I have no doubt that that would occur, because in the diploma in forestry, which has now been established for a couple of years, men who have passed in botany and geology in an honours school, and who have taken at least a third-class, are exempted from those subjects in the forestry diploma.

15087. (By Mr. Medd.) In drawing up the list of subjects for foreign languages have you considered Russian and Spanish as being especially applicable to agriculture?—The University regulations on this subject are that for a pass degree a man must take a modern or an ancient language. The ancient language must be Latin or Greek;

the modern language must be French or German, or for certain natives of India it may be an oriental language; but I do not think that either Russian or Spanish is an alternative.

15088. You might agree with me that Spanish is probably the most valuable modern language for an agriculturist to know?—I do not know whether I should agree with you in that.

15089. The amount of trade which the farming classes have with South America is probably greater than with any other part of the world, and our English people are constantly in difficulty in finding capable agriculturists who are familiar with Spanish, and the same with regard to Russian. I was only suggesting the possibility of you considering that point when drafting your Statutes, the placing of Spanish or Russian as alternatives?—I am sorry I cannot give you all the details of the Statutes at the moment, but clearly, of course, this matter that you raise would apply all round; that is to say, not to agricultural students alone.

15090. I do not know that it need apply generally. May not the fact that none of your Oxford pupils have hitherto gone to Reading be attributed to this, that Oxford has no prepared any training for them. The conditions will be wholly different in future?—Yes; but if we provided agricultural training at Oxford, it seems to me that that would be an additional reason for their not going to Reading. In the past, with no agricultural training at Oxford, there has been an inducement for them to go to Reading, where agricultural training is provided, but they have not gone.

15091. Quite so; but I mean in the high agricultural training in science and which your scheme suggests. Having had facilities for that at Oxford, they would go for the more practical work to Reading, or might go?—Yes, I think they might very well go to Reading for special work for instance, in dairying, which Oxford would not provide.

15092. No importance can be attached to the fact that they have not gone in the past, because they have not been encouraged to take up the subject at Oxford at all?—No, they might go for specialised instruction in dairying or horticulture—in which Reading is very strong—and poultry.

15093. Am I correct in estimating the total cost you suggest as £2,000?—£2,000 would appear to be about minimum to start with.

15094. The University already provides £1,000?—Yes.

15095. In regard to diplomas and residence, the Vice-Chancellor, as you will remember, I think, in giving evidence here said there were certain regulations on conditions with respect to different types of students: the did not all have to reside three years?—No; if they come from an affiliated institution that saves them one year and that would apply equally in this case.

15096. Have you considered at all what area might most usefully be affiliated to you first in regard to counties, and secondly in regard to institutions?—Of course, at present the University only recognises institutions. If men have gone through, I think it is, two or three years' training at an affiliated institution, that period at the institution saves him one year when he comes to Oxford; but there has been no question of allowing a man to forego any part of his training in Oxford in consideration of his coming from any particular area.

15097. Then I take it you would have no difficulty in affiliating Cirencester to you?—I think we might have very great difficulty indeed in affiliating Cirencester to us. I am not prepared to say that it would be impossible, but I am prepared to say that it would probably be difficult. You would like, I suppose, to see a student from Cirencester coming to Oxford and being in a position to take his diploma with less than the normal time of residence?

15098. With two years. It would be upon the same terms exactly as Reading, and would not you desire ultimately to have such counties as Hereford, Gloucester, Wiltshire and Somerset affiliated to you and comprised within a group?—No, we do not want any affiliation of that kind. You see the ground is already taken up by Reading. Reading already has Oxford and Buckingham and Berkshire affiliated to it.

15099. Yes, it has those counties, but the counties I am referring to are excluded from affiliation?—I do not think so. I think the University of Oxford regards itself as an Imperial institution, and would not view with favour the suggestion that it should be for certain purposes regarded as a local institution. That is my view, but there is no reason, of course, why a man should not come from Hereford or any other county.

Dr. W.
Somerville.
—
16 July, 1907.
—

15100. Yes, but the University of Cambridge accepts some responsibility in that respect?—The University of Cambridge, of course, throws its diploma open to a man from any part of the world, without any qualification of residence, and although one would think that that would attract candidates, I fancy that we shall have evidence put before us that in point of fact very few men come from the outside for these diplomas at Cambridge.

15101. (*By Lord Barnard.*) You have practically answered one question that I was going to put to you, that Oxford would probably not favour any suggestions which would involve it becoming a local institution. It considers itself practically a national, and even an Imperial, institution?—Yes.

15102. Therefore any question of affiliation with subordinate institutions would not be exclusively based on local grounds. Is there any reason why an institution in the north or the west of England, or in the south-east, should not be affiliated with it?—No, none at all. I do not know what the affiliated institutions are, although Reading happens to be affiliated. I know there are others out of the country altogether that are affiliated.

15103. As to the Cooper's Hill College, or rather what was formerly Cooper's Hill, how many students are there now at Oxford who take the Indian forestry course?—I can tell you exactly: 27 in their first year and 15 in their second.

15104. Are they matriculated students of the University?—Without exception they are.

15105. With regard to college estates, they are situated all over England, are they not?—They are.

15106. So that nothing short of a great Parliamentary movement for altering the system of administration would really affect your department?—I fancy not.

15107. I dare say most of us know that in former years they were managed on a system of letting on fines?—Yes.

15108. That has altogether ceased now?—Entirely.

15109. They are managed now on the ordinary system that large privately-owned estates are managed?—That is the attempt.

15110. You used the words, I think, that you have reason to believe that there are numbers of undergraduates at Oxford who are likely to be in some way or other connected with the management of land. Could you give us any grounds for that belief? Why I ask is because I should have thought it would have been the reverse?—The grounds for my belief are that those at present who possess English estates have to a large extent I think gone through one or other of the old Universities.

15111. Do not the eldest sons of the English country gentlemen go into the Army nowadays?—You have more experience of English country gentlemen than I have, of course; but I meet with English landowners very frequently who have been through one or other of the Universities.

15112. Naturally you meet with many in every profession who have been through a university. You have

better opportunities of judging than I have, but casting my mind back to my own undergraduate days at Oxford, I was four years at Oxford, and to the best of my recollection a very large proportion of those men either became soldiers, or professional men, or clergymen, or went abroad, and very few of them that I know of were connected with land. I understand the University of Oxford has two distinct objects in view, one is that a man should go through the ordinary university education with an agricultural bias at the end of it, and the other would be strictly speaking not university education at all, but that he would take a diploma for his knowledge of agricultural science?—Yes; but there are diplomas in a considerable number of subjects already. A man may take a diploma in economics, or anthropology, or in geography, and so forth; and the men who take these diplomas as a rule are men who have already taken a general degree, if one may call it so, and who have gone through an additional year of residence for the purpose of specialised study, and the men who would take the agricultural diploma, I should hope, would be men who had already taken a degree without particular reference to any specific subject. A man very often comes to the end of his university course and suddenly realises that his course has led to nothing, that he has qualified for nothing in particular, and realising that, he then resolves to specialise for a year, it may be, as I say, qualifying to be a teacher, or in some other direction, and in the case of men whose tastes lay along the line of agriculture I should hope they would take the agriculture diploma.

15113. (*By Professor Middleton.*) You refer to the fact of a man coming to the end of his course and then finding that he wants to take a diploma in a new subject. Do you not think it very desirable to get hold of the student who is going to take agriculture early in the course, and guide his study?—Certainly. We shall take them as early as we can get them, but a large number of men always will get to the end of their general course before realising that it has led to nothing in particular. The ideal condition of things, undoubtedly, is to catch them young, but many of them escape.

15114. Would you have them utilise the vacations for practical work?—Yes, to some extent; but I think the practical work can better be done by taking a year of definite application in that direction.

15115. Afterwards?—Afterwards. Of course the question has often been before this Committee as to whether a man who is going to be an agricultural scientist should learn his practice before or after his college course. I have not the smallest hesitation in saying that he could make a great deal more of his college training if he had a thorough knowledge of practical agriculture before, but I should not on that account recommend a young agriculturist who is going in for agricultural science to take his practical work before he takes his university course, because in a great many cases such men never come on to scientific study after they once get fairly launched on practice; that is to say, it is not an alternative between taking practical agriculture before or after science; but is very largely an alternative between taking science before agriculture and not taking science at all.

Mr. A. G. L. ROGERS called and examined.

Mr. A. G. L.
Rogers.
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15116. (*By Lord Barnard.*) You are the Head of the Intelligence Branch of the Board of Agriculture and Fisheries?—Yes; I have been there about three years and a half.

15117. Would you tell us exactly what the Intelligence Branch is?—I think the simplest plan would be, if I may be allowed, to read the extract from the official paper which is described as the Division of Business which gives the official explanation of all the work done by each division, and branch of the Board.

15118. If you please?—“*Intelligence Branch.*—Business and correspondence connected with the following subjects, so far as they relate to the work of the Board—sale of food and drugs, fertilisers and feeding stuffs, margarine and butter substitutes, merchandise marks, weights and measures, agricultural labour and workmen's compensation, cultivation and utilisation of crops, adulteration and testing of seeds, insect and fungus pests, wild birds, railway rates and facilities, agricultural organisation, sale of agricultural produce (except statistical work), agricultural banks and insurance, breeding and management of farm

stock, poisons, agricultural experiments, taxation and rating, fruit cultivation and cider making, hops, agricultural machinery and traffic (including canal traffic), dairying, bee-keeping, poultry-keeping (including diseases of poultry), meteorology. The examination and collection of information from the home, colonial and foreign newspapers, Government reports, and publications of learned and technical societies on matters relating to agriculture and fisheries and the preparation of reports when necessary on them. The preparation and editing of the *Journal of the Board of Agriculture* and the leaflets of the Board. Business connected with the sale of certain of the Board's publications. The issue of certificates required for the exportation of live stock to certain foreign countries. The collection and tabulation of reports of agricultural experiments conducted in Great Britain. The care and management of the Board's Library. The translation of letters and papers in foreign languages for the Board. Correspondence with the honorary agricultural correspondents on matters not dealt with by other branches of the Board. Business (except accounts, technical science and establishment

matters) with the Royal Botanic Gardens, Kew. The preparation of an Annual Report to Parliament on the work of the Intelligence Division."

15119. When was this Branch first established?—The Intelligence Branch was founded, I think, in 1893.

15120. Is it under the Secretary of the Board, or have you an Assistant Secretary?—We have an Assistant Secretary for the Intelligence Division. The Division is divided into the in-door branch and the out-door branch; I am head of the in-door branch.

15121. You have a considerable staff, I suppose?—There are three assistant heads, one staff officer, four second division clerks, and three boys.

15122. How do you manage your translation of foreign documents; are you all qualified to do that yourselves?—I can do about four languages myself, and I expect every one of my assistants to qualify in one or two languages, including the second division clerks. We have one who got his appointment because he was studying Italian, another is studying Spanish, and practically all of them. I think, know more or less German, and of course, French.

15123. Is the work of the branch increasing?—The work has increased very considerably in the last three years.

15124. What relation has your Branch to the Branch which deals with agricultural education?—The Educational Branch of the Board consists at present only of inspectors. There is no in-door staff of the Educational Branch; we do all the in-door work of the Educational Branch. In addition to that, we consider, that the whole of the work of collection and dissemination of information is educational and we regard agriculture more from an educational point of view than from an administrative point of view, in much the same way, if I may give an example, as in the Spanish-speaking countries, the Ministerio di Fomento deals with agriculture, that is to say as a body for encouraging agriculture than as a body for governing it.

15125. You are familiar with the principles, I daresay which are adopted in Ireland?—Yes.

15126. Do you perhaps in a smaller way attempt to give effect to those principles in your department?—As far as we can. We have only two subjects which we deal with otherwise than educationally, that is the Sale of Food and Drugs, and the questions under the Fertilisers, and Feeding Stuffs Acts.

15127. In addition to the inside branch that you have referred to, what is the outside branch which you mentioned?—There is an out-door branch of three inspectors.

15128. What is their duty?—Nearly the whole of their time is taken up in dealing with questions under the Food and Drugs, and the Fertilisers and Feeding Stuffs Acts, and questions of railway rates, and the out-door work corresponding to the indoor-work that the clerical staff do.

15129. Now, with regard to the general public, you have something to say as to your relation with them?—As I have said, the work of the Branch is naturally divided into two classes. There is a good deal of work that we have to do for other branches of the Board, such as translations, and so on. I mention that in order to explain that the whole of the time is not taken up with the general public, but the work we do for the general public may be described as the collection and dissemination of information on all questions relating to agriculture, and of acting as far as possible as the Attorney of Agriculture in dealing with other departments.

15130. You are prepared to give us some information as to the methods you adopt first of all for the collection and dissemination of information?—I have divided this under practically four different heads. There is the collection of information through the honorary agricultural correspondents, through the agricultural colleges, by general correspondence, and through Kew and the other authorities such as the Government Laboratory. Perhaps I might take the last one first as it is the simplest. All questions relating to botanical subjects are referred to Kew; all questions relating to chemical subjects would be referred to the Government Laboratory. We have also a zoological expert to whom we refer questions of entomology, and so forth. Those are outside experts.

15131. Do you submit questions to those different departments?—Yes; we have a very large number of samples of diseased plants, or plants affected with insect pests, sent to us. The ones that are supposed to be the subject of a fungus attack are sent to Kew, and those which appear to be attacked by insect pests are referred to our entomological expert. We have a very large number of those samples.

15132. Now the next head, the correspondents?—*Mr. A. G. L. Rogers.*
The honorary agricultural correspondents are situated all over the country. Their number is somewhere about 330, and they, so to speak, act as informal representatives of the Board in their districts. Their chief use is for supplying the Board with local information whenever such information on any particular subject is wanted.

16 July, 1907.

15133. Do most of them take an active interest in the office, do you think?—Would you mind defining a little more clearly what is meant by "active interest"?

15134. Do they supply you with a great deal of information?—The chief work of the correspondents is to send us information when asked for; very few send unless they are asked.

15135. Do you find that the information that they send to you is useful?—We have had a great deal of useful information from the agricultural correspondents.

15136. (*By Lord Belper.*) Those agricultural correspondents were appointed a few years ago for the first time, were they not?—Yes. The idea was Mr. Hanbury's, but it was not carried into execution until after his death.

15137. (*By Lord Barnard.*) I suppose they vary; some are more busy than others?—Some are more busy than others.

15138. Have you ever contemplated the possibility of using them for the dissemination of information?—Yes, but I do not think it would be a good idea.

15139. Could you tell us why not?—In the first place you must remember that these gentlemen are none of them paid, and therefore the Board would have no control over them; the work is entirely honorary.

15140. (*By Lord Belper.*) They get some expenses or something allowed, do they not?—No, no expenses.

15141. (*By Lord Barnard.*) I suppose they would get travelling expenses where such expenses were incurred?—Yes, they would get travelling expenses if we asked them to travel for us; but we never have as yet.

15142. (*By Lord Belper.*) I suppose one of their duties is rather to mix with the people about, and to go to markets, and so on?—In the course of their ordinary business.

15143. But they get no expenses paid?—They get no expenses paid.

15144. (*By Mr. Latham.*) As a correspondent myself, I think it is only fair to say there is no remuneration for our services, and all our letters are sent to the Board free?—That is so.

15145. (*By Lord Belper.*) They get no remuneration in any shape or way?—No.

15146. (*By Mr. Latham.*) We get all our stationery free?—You get all your stationery free, and the publications of the Board.

15147. (*By Lord Moreton.*) Cannot anyone get all the publications free?—Not all the publications.

15148. (*By Mr. Latham.*) We get almost a library of information through being an agricultural correspondent which I for one value very highly; and a great many people who know I am a correspondent come to me and ask me if I can lend these things to them.—Yes.

15149. (*By Lord Barnard.*) Is there anything more you would like to add on the subject of honorary correspondents?—I should like to give you one instance of where we have received very valuable information from them. Some time ago we had information of the existence of a rather bad outbreak of the diamond back moth in Norfolk, and we wrote round to all our correspondents in Norfolk, and asked them for information as to how serious the attack was. Fortunately, it proved not to be so serious as was at first supposed.

15150. (*By Lord Moreton.*) Did you get valuable assistance in that matter from your local correspondents?—I think, on the whole, the assistance was valuable.

15151. (*By Lord Barnard.*) That was merely an instance of the use you make of the correspondents?—Merely one instance; there are a very large number of instances quoted in our Annual Report.

15152. Now to come to the agricultural colleges?—With regard to the information collected from the agricultural colleges I should like to point out that, in the first instance, practically all the most valuable articles which appear in our *Journal* have been supplied by the different members of the staff of the agricultural colleges.

15153. Are they paid for that?—Yes, they are paid as

Mr. A. G. L.
Rogers.
16 July, 1907.

contributors to the *Journal*; and, secondly, that whenever we want to get any special information about the conditions of agriculture in any part of England, we generally find that the agricultural college is the place where we can get the best information of a scientific nature. In connection with that I might state, perhaps, that the want of an agricultural college in the south-west part of England very much affects us, inasmuch as we find it difficult to get information from that part of the country, whereas from places like Yorkshire, or Kent, or Cambridge, or Wales, as we are in close touch with the agricultural colleges there, the information is much better and much more accurate.

15154. Do the agricultural colleges supply all their publications to you?—Yes.

15155. What use do you make of them, or do you make any use of them?—They are all filed very carefully in the library, and, as I daresay you know, the library of the Board of Agriculture is open to the general public, not only for reading in the office, but also as a lending library.

15156. I do not think that is generally known?—It is mentioned every month in the *Journal*, in a footnote.

15157. With regard to these leaflets and publications issued by the colleges, are they read and annotated, or made any use of beyond their being filed and put away?—The reports on the experiments are all epitomised and put into the *Journal*. The leaflets, of course, will not be because there is nothing generally very special in them; they are merely meant for local circulation; but we have recently, I think, put epitomes of every single one of the reports on experiments in the *Journal*. In addition to that, we are preparing a sort of index and tabulation of these reports, which I hope eventually will be very useful.

15158. Have you anything more to say on the subject of agricultural colleges?—I should like to say one thing, if I may. The same remark applies with regard to Scotland as to the south-west of England. The Board do not give any grants to the agricultural colleges in Scotland, and therefore, although we are on the very best of terms with all the members of the staff of the Scotch agricultural colleges, we are not in the same position with regard to them as we are with regard to the English colleges. The orientation, so to speak, of the Scotch colleges is towards the Scottish Office, and the orientation of the English agricultural colleges is naturally towards us.

15159. Cannot you get information in Scotland through the intervention of the Scottish Office?—Yes, and you can get it direct by writing to the agricultural colleges; but it is not the same thing quite as it is with English colleges.

15160. How do you suggest it could be improved?—I am not making any suggestions.

15161. You could not attempt to deprive the Scottish Office of any part of the Scottish administrative work?—I have not suggested it.

15162. And you would not attempt it. Therefore this difficulty of getting information must remain, except by voluntary means?—Yes.

15163. Then as to the last point, namely, general correspondence?—We have a very large number of letters every day, varying from about 30 or 40 to sometimes 500 or 600 persons who write up to us asking for leaflets. I make a point of going through all those myself in order to see whether there is any special information with regard to the prevalence of insect pests or any other kinds of pests to be gathered from those letters in order that we may make further enquiries in the country. It was through that that I first heard about the spread of black scab in potatoes from Cheshire, over the North of Wales up into Lancashire and down as far as Staffordshire.

15164. That enabled you to take action?—Yes; it is a very serious potato disease.

15165. Is that all you have to say about general correspondence?—Yes.

15166. Now will you go to the methods of dissemination. The first is the *Journal*?—Yes, in the first place, there is the *Journal* which is published monthly, and which is sent free to our agricultural correspondents, to practically every agricultural society in Great Britain, and of course to the colleges, and a large number of free libraries and other agricultural institutions. In addition to that we have a very considerable number of subscribers, so that we have a very valuable means of disseminating information about agriculture, and as to the work and views of the Board through the *Journal*.

15167. When you say it is published, is it published in the ordinary sense of the term by an outside publisher, and is it on sale to the public, and if so, where?—In the first instance the *Journal* was published by the Stationery Office, subsequently it was farmed out to a firm of publishers, and last March the publication was taken over by the Board, so that we now do the whole of the work ourselves. We sell the *Journal* ourselves.

15168. It does not pass through any trade channels?—We sell a certain number through booksellers and railway book stalls, but the greater part is done by direct subscription.

15169. Do you think it reaches a sufficient number of hands?—It is very difficult to say how many readers there are. I know very well the number of persons who subscribe, but as a considerable number of copies are sent to agricultural societies, and, as Mr. Latham said, to the agricultural correspondents, and a good many persons come and borrow copies of the *Journal*, I am perfectly certain it is read a great deal more than it is subscribed to.

15170. This *Journal* really is a source of considerable expense to the State?—Up to a year ago the publishers paid the Stationery office £100 a year for the privilege of publishing the *Journal*.

15171. Do you have any idea as to whether the sale of it, say on railway bookstalls, is increasing?—During the last two years the sales by bookstalls and through agents, booksellers, and so forth, slightly increased, and the number of subscribers went down. That was due to the fact that the *Journal* being a monthly publication could not be registered as a newspaper, and consequently the postage on a 4s. publication was 2s. a year, that is 50 per cent. We have made an arrangement this year by which as the Board publish the *Journal* we send it out post free. The subscription now is only 4s., and the number of subscribers is increasing in consequence.

15172. Do you ever have any evidence as to its being much appreciated?—We have a very large number of letters at one time and another, more especially recently, saying how useful it is.

15173. Letters intended for publication in the *Journal*?—No, letters sent to us.

15174. Commenting on information that has been given?—Yes, we get letters commenting on information nearly every month.

15175. Is that all you have to say about the *Journal*?—Yes.

15176. Is it your idea that this publication reaches the hands of all those who are likely to be interested in it?—No, not yet. Perhaps I may give one example of the use to which we have put it. Some time ago we had complaints from people who wanted to send pedigree cattle to foreign countries, but did not know what the importation regulations in those foreign countries were—so we sent round to practically every civilised country and got copies of their official regulations dealing with the importation of cattle. Those were epitomised and they have all been published in the *Journal*. We are now doing the same with regulations dealing with the importation of plants.

15177. I think most foreign countries and British Colonies do publish and issue an official publication of this kind?—Yes.

15178. Other Government departments issue these official publications?—Yes.

15179. Do you know what the origin of the *Journal* was at all? Was it that the Board of Trade first established an official *Journal*?—Yes, I think that is so.

15180. (*By Lord Belper.*) Do you know how long the *Journal* has been running now?—13 years. It was a quarterly publication until three years ago, and now it is a monthly.

15181. (*By Lord Barnard.*) Now, to come to the next method, leaflets. We are more or less familiar with them. Is there anything special you wish to say with regard to them?—The leaflets are, to a large extent, the articles which have been published in the *Journal* reprinted.

15182. I have in my hands a criticism from a gentleman who is well able to judge of these things, that he has forwarded to the secretary of this Committee in which he animadverts rather severely on these leaflets. He says that he considers the language used is not sufficiently simple in many cases, and that there are, as he describes it, to use his own words, "padding and platitudes." I suppose, as a matter of fact, they are prepared by gentlemen

who have practical knowledge, as a rule?—Yes, in every case.

15183. At the request of the Board?—Yes.

15184. Are they edited or published as they stand?—They are, in nearly every case, first of all published in the *Journal*. We then look at the newspaper criticisms to see whether any suggestions have been made by the critics. Our poultry articles are usually dealt with very faithfully in *The Field* and we always read their criticism with some interest. We then have the article set up as a leaflet, and in that form it is very carefully criticised, first of all in the office, and then sent round to two or three experts in different parts of the country for their observations and criticisms. These criticisms are again considered, and so, before the leaflet is published, it has generally been criticised by three or four experts on the subject.

15185. Do you not agree with this gentleman who thinks that there is too much "padding and platitude"?—That is a statement that has been very often made, and I do not think it is quite fair because people, I am afraid, do not fully understand the nature of the leaflets. Some of these leaflets, of course, are written for quite uneducated persons. For instance, the one on the construction of pigsties was written avowedly in the very simplest language possible. No long words were used, and the description how to put down the concrete floor of the pigsty was given very carefully, and as if one were talking to an agricultural labourer. On the other hand we have a leaflet on the Relation of Woods to Water Supply, which is naturally not written in the same style as it is obviously not intended to be put into the hands of agricultural labourers. Between these two extremes we have all kinds of variations, and I think that a great many of the critics who criticise the leaflets sometimes for being too simple and namby-pamby and sometimes for containing too many long words which no labourer can understand do not quite appreciate that the leaflets are not always meant to be put into the hands of the same persons.

15186. He also complains of the illustrations?—The history of that is that first of all the illustrations were all line drawings, and then it was possible to get a very good illustration on very common paper. Subsequently, when we took process blocks for the illustrations it was impossible to get a clear illustration on the common paper, and we took art paper. Then objection was made that we were spending too much money on the free distribution of leaflets, and we had to cut our expenses down. We have now managed to get a better quality of paper, not quite as good as art paper, but still sufficiently good, and I hope we shall be able to improve the quality of the illustrations considerably. We have taken a lot of trouble to try and improve them, but we have not by any means got as far as we propose to get.

15187. Are the terms on which they are printed much the same as the terms on which the *Journal* is issued, of which you have already told us?—No; we have a special vote from the Treasury—I think this year it is £1,000—for the printing of leaflets; but, of course, that includes the payment for the printing of the bound volume, and the sectional volumes of leaflets which we sell, and where we get the money back again, though not generally in the same year. We printed the sixpenny volume of the first hundred leaflets about two years ago for the first time, and since that I think we have sold about 10,000 copies.

15188. Ten thousand copies of this one volume?—Yes. We have quite a steady sale for that sixpenny volume; it goes on steadily every day. In addition to that we have published the first 148 leaflets in sectional volumes. Those are sold at a penny each volume. In the last two years we have sold about 80,000, that is to say, very nearly 10,000 of each of the eight sectional volumes.

15189. There is one more suggestion which is very familiar to persons more interested in literature than I am, and that is as to whether the authors' names should not be subscribed at the foot of the leaflets?—I do not quite know who would be considered the author of a leaflet which had been revised by about four people. I think very often the original writer might not necessarily agree with the alterations.

15190. It is a compilation, the result of the combined knowledge of a good many brains?—Yes. The articles in the *Journal* are always signed when they are not prepared in the office.

15191. This writer seems to be under the impression that the leaflets are not written by persons who know what they are writing about?—Might I be allowed to read one or two letters that we have received from the opposite point of view?

15192. Yes.—One gentleman writes: "I must mention one instance which shows the value of these leaflets. A friend called to see me some time since. Being engaged at the time, I handed him a few leaflets to occupy him a few moments. On returning to him I found his hair on end as he exclaimed, 'According to this leaflet I have sheep scab in my flock!' He went home, called in the police and 'vet,' and, true, his whole flock was affected. He had noticed that they had been very uncomfortable for some time, but thought it was ticks. Had he seen your leaflet a month earlier he would have been saved a vast amount of labour in clearing his flock." This is another one from an estate office: "I shall be much obliged if you will kindly let me have 50 copies of your leaflet, No. 181, 'Cleansing of Water-courses.' The information is just what is wanted and will do a great deal of good in this neighbourhood. I intend distributing the leaflets amongst the tenants of this estate and their neighbours." This is another one from a Sanitary Inspector, writing from a Town Hall: "About a year and a half ago you were good enough to send a large number of copies of Leaflet No. 151 for distribution among farmers supplying this town with milk, both within and without the district. I take this opportunity of informing you that since the distribution the standard of cleanliness has in many cases been improved."

15193. In spite of what you say, I think it is a fact sometimes that it is not sufficiently well known that these are really the production of the Board, and not of some faddist who wishes to take the opportunity of airing his own views. Do you agree with me?—I should have thought from the newspaper criticisms that the sin is imputed directly to the officers of the Board.

15194. You think the criticisms are written by editors or managers probably?—Yes.

15195. We do not place much reliance on those, if they do not come from the men who are interested practically. Have you anything further to say on the subject of leaflets?—No, I do not think so.

15196. Now as to the Annual Report; that is a Parliamentary Paper, I presume?—It is.

15197. I suppose you are aware that with the enormous quantity of literature that is showered upon members of the House of Lords and of the House of Commons that it is an absolute impossibility to read them all?—Yes.

15198. Do you take any steps to bring your Report specially to the notice of those who would be most interested? Personally, I confess I never see it, not specially I mean?—The Board of Agriculture Report is used as a vehicle very often of explaining the views of the Board on certain subjects. We have a very considerable list—I think it is about 1,000 persons—to whom we send that Report. They are mostly officials, persons connected with the administration of the Food and Drugs Act and the Fertilisers and Feeding Stuffs Act; and in addition to that to a certain number of persons who are interested in the general work of the Board.

15199. Is the Board under any statutory obligation to issue a report of its proceedings, do you know, or is it merely a voluntary act?—I think it is under a statutory obligation to publish it.

15200. Are not publications of this kind very often drawn up by Government departments in order that they may afterwards produce them, and quote from them, and flourish them in the face of the public. I do not wish to speak disrespectfully?—It is a very convenient depository of information.

15201. For the Board?—And for those persons who read the Report.

15202. You also disseminate information by means of the Press?—Yes; the work we have done in that respect is possibly best known in connection with the outbreak of the American gooseberry mildew which was found in England last autumn. The Board published several Press notices relating to it. We brought out, first of all, a memorandum on the subject advising gooseberry growers what they should do, a special memorandum, not a leaflet, in order that it might attract more attention. We sent that round to a large number of newspapers, practically the whole agricultural and local Press. Later on we sent round a second memorandum on the subject. Some time ago, when we heard about the black scab of potatoes in North Wales, we sent a Press notice to all the papers circulating in that part of the country informing them that a leaflet dealing with the subject could be got from the Board. We have done that on various occasions.

Mr. A. G. L.
Rogers.

16 July, 1907.

Mr. A. G. L. 15203. What means do you take to ensure that the notices which you wish to reach the hands of the farmers get into the papers which the farmers read, because I do not suppose it would be much use sending it to *The Times*?—*The Times* puts it all in.

—
16 July, 1907.

15204. No doubt, but small farmers in out of the way places do not read *The Times*?—No, but we send them to all the big London papers, the agricultural papers, to practically every local paper, and to a great many other papers. We send to all the religious papers, and a good many trade papers as well. We get a very large number of applications from persons who say, "I have seen a notice in the *Church Times* that you are issuing a leaflet about gooseberry mildew," or something of that sort.

15205. (By Mr. Latham.) And also to the Chambers of Agriculture?—Yes; and farmers' clubs, and to all the correspondents as well; and I know that these notices are put in all the small papers.

15206. (By Lord Barnard.) You say "Press notices and other methods." What are the other methods?—I put that down to show that we do not rigorously confine ourselves to certain methods, but that we adopt every method that we can think of.

15207. None of these methods, either with regard to the collection or dissemination of information, refer to local authorities at all. Are not you in touch with local authorities?—Yes; we send all our notices to them.

15208. To County Councils?—The clerk of the County Council gets one, and certain of the County Council officials always get them.

15209. Supposing you send a thing to the clerk of a County Council, do you simply put it in an envelope and post it, or do you send him a letter with it and ask him to do anything with it?—It would depend entirely what it is that we send. With regard to certain things we merely send this information, but if we want him to do anything, of course an official letter would be sent explaining to him what we wanted to be done.

15210. To take this Annual Report, for instance, it would be very little use to send this to a clerk of a local authority unless you asked him at the same time to lay it before his Agricultural Committee, if there was one. The clerk would have no time to read it himself, and it would probably be placed on one side?—No; he is their official.

15211. But nobody knows it is there?—The clerk knows it is there.

15212. But he can make no use of it himself. It can only be useful to the clerk for the information of the members of his council, or those who are specially interested?—I think the clerk can make considerable use of it.

15213. (By Mr. Latham.) In the Chamber of Agriculture it is always put on our Agenda that the Annual Report of the Board of Agriculture has been received. I think you ought to tell us that this Report is sent to all the agricultural clubs and farmers' clubs?—I did mention that.

15214. (By Lord Barnard.) My experience of a Government department is that it is quite useless sending them official documents unless you send a covering letter saying "I am directed to enclose" so-and-so for the information of so-and-so, otherwise they are put into pigeon-holes and other places, and are never used. However, that is a matter for the Board?—Yes.

15215. (By Lord Belper.) Are these distributed free of expense?—A certain number are distributed free. Technically those are not the Board's publications, those are the publications of the Stationery Office.

15216. To take the Board of Agriculture's Annual Report to begin with, how many people is that distributed free of charge to, roughly speaking?—About 1,000.

15217. Are they sent to every County Council?—Yes.

15218. One copy?—One copy, and to about 1,000 persons in addition.

15219. With regard to these leaflets, to whom are they distributed?—I do not think we send to the clerks of the County Council in that case.

15220. Not even when there is some prevalent disease existing about which your pamphlets treat?—It would depend, of course, entirely. For instance, if it is a case of anthrax, we should not send one; we should send about 5,000 with a letter requesting him to distribute them. That is how they get distributed.

15221. (By Mr. Medd.) I imagine that is how you have acted with reference to the American mildew pamphlet?—Certainly.

15222. Certainly our Committee have had one?—Yes.

15223. Although I am a member of the Education Committee I have no means of ascertaining what you publish unless I choose to write to London?—Might I say that it would be perfectly easy, because every person who writes up asking for a leaflet gets, in addition to the leaflet, a list of all the publications of the Board, and an application form upon which he can apply for anything that he wants.

15224. I am quite aware of that. I have a collection of your leaflets which were sent to me at the beginning of last year, but since then I have not had a single leaflet from you, and I should have no means of knowing that you had published a single leaflet unless by accident it caught my eye in the newspaper, and small farmers and labourers, who are materially concerned in many of these matters, have no opportunity whatever of knowing of the leaflets?—Have you read the passage in the last two Annual Reports of the Intelligence Division showing what steps have been taken to secure the distribution of the leaflets?

15225. I have not.—It is fully set out there.

15226. (By Lord Belper.) Some of these publications are perfectly new to me to-day, I have never come across them in any way before, and that shows that they cannot be very largely disseminated. Some of them I was quite aware were sent to particular officials. Is the Report of the Board of Agriculture sent to the Director of Education in the counties?—No; the Education Report is sent, not the Intelligence Report.

15227. The Director of Education is in touch with any agricultural education which is being given in the county, and if you want it to be distinctly made use of, it is surely to the Director of Education that it should be sent to and not to the Clerk of the Council?—Perhaps I may be allowed to point out that this Annual Report, although it is called the annual report of the Board, is a publication of the Stationery Office, and if we want copies we have to buy them from the Stationery Office. The Stationery Office put them on sale and they expect people to buy them.

15228. I am only wanting to find out how it is that these publications are not seen at present and how they could be better distributed. I understand you send it to the clerks of the County Councils free of charge?—Yes.

15229. Then why should not it be sent to the man who is much more competent to deal with it. I have two annual reports here; which report are you referring to. Is this Annual Report on the Distribution of Grants sent to anybody?—Yes.

15230. To whom is that sent?—First of all that is sent to the Education Secretary of each County Council, and in addition to that, we write and ask them how many copies they would like to have for their agricultural or education committee.

15231. (By Mr. Latham.) Are we to take it for granted that the whole of the publications of the Board of Agriculture are to be distributed throughout the country free of cost?—We could not distribute bulky publications like the Board of Agriculture Report without very considerable expense.

15232. (By Mr. Medd.) How can you explain that people distinguished in agriculture and education have no knowledge whatever of these publications. Sir Thomas Acland, the other day, giving evidence here, said when a document of yours was put in his hand, that he had never seen or heard of it before. That was issued by your Intelligence Department. If Sir Thomas Acland, a man who has been chairman of the Devonshire Education Committee from its commencement, had never even seen or heard of its publication, how can you effectively claim that you bring these to the notice of the public?—I think the reason why Sir Thomas Acland did not know of it is very probably the reason that the Chairman mentioned just now, that persons in Sir Thomas Acland's position get such a very large number of publications sent to them of one kind and another, that they have not time to read them, and very often do not know what they have actually received.

15233. There was another witness who made identically the same remark as Sir Thomas Acland?—We have a list of about 10,000 persons to whom we send a copy of every leaflet as soon as possible after it comes out. We send it to all the newspapers; we have a notice put up in the post offices informing people where they can get the leaflets; we have inspectors going about recommending our leaflets; the inspectors of the Board of Education recommend their use in every one of the elementary

Mr. A. G. L.
Rogers.
16 July, 1907.

schools; and in addition to that, as I say, you will find in the report mention is made of the other ways that have been taken to distribute them. I think our annual distribution of leaflets is about a million and a half.

15234. (*By Mr. Acland.*) You think they do adequately get into the hands of the public if there is such a large distribution as that?—I do not think it is complete. I think we are getting on and I think in time we shall extend the circulation of the leaflets even more; but I think it would be a mistake to say that the leaflets were not known.

15235. (*By Lord Belper.*) They must be known to some extent, no doubt; but the question is whether all these publications do get into the hands of the people who are interested in them and how much they do get into their hands?—With regard to the leaflets or the Annual Report?

15236. I am speaking generally of them all, but specially with regard to the reports. The leaflets, as you say, no doubt are distributed under certain circumstances, and very large numbers are likely to be required especially where they deal with some pest or disease, but talking of the things generally, I very much doubt whether they get into the hands of the people who are interested in them as much as they ought to do. Do you ever write to anybody connected with agriculture and ask them whether they would like to have a copy of these publications?—Such as?

15237. This report and the other report and things of that sort—there are two reports here?—You are referring to the Annual Report?

15238. I have two, one with regard to the Distribution of Grants for Agricultural Education and Research. That is sent to nobody, you say?—The Education Report?

15239. Yes.—The Education Report is sent to the Education Committee of every County Council, and, in addition to that, a letter is sent to that committee asking them how many copies of that they would like. The greater part of that report is reprinted under another title and several hundreds of copies have been distributed; practically every member of the Education Committees in most of the County Councils have had it.

15240. I rather gathered you said it would be a considerable expense to send it to a large number of persons. Do these publications pay their way at present?—The publications printed at the Board's expense and sold by the Board all pay their way practically; the publications which are issued by the Stationery Office we are not responsible for.

15241. Which is that?—The Annual Report.

15242. Why should the Annual Report be printed by the Stationery Office while all the other reports are printed by the Board and made to pay?—The Annual Report is a Command Paper; it is laid on the table of the House, and all papers that are laid on the table of the House are published by the Stationery Office.

15243. Do you mean according to the regulations that it is a necessity that it should be printed by the Stationery Office if it has to be laid on the table of the House?—Yes, I understand that is what the Stationery Office is for; that the Stationery Office was formed for the purpose of seeing to the distribution and sale of Government publications.

15244. It seems a rather curious distinction if you have a certain number of publications which are under your control and which you are able to deal with in such a satisfactory manner that you can make them pay, that a particular report is taken out of your hands and printed by another department and you do not know whether it does pay or not?—I do not.

15245. You have nothing to do with that?—No.

15246. I do not know that we can carry it any further, but I have had circulars from the Board of Trade, with regard to trade and asking me whether I would like copies of certain publications, but I certainly have not had anything in that way from the Agricultural Department of the Board of Agriculture.

15247. (*Lord Barnard.*) This report of 150 pages, roughly speaking, is not drawn up in pursuance of an Act of Parliament at all, as far as I can make out. I have looked at the Act. It is a report not by the Board but a report to the Secretary of the Board by various departments, and then it is laid on the table of the House and published as a Command Paper. I should have thought it would have been much more useful if it had been published even

in the shape of a Christmas number or anything like that rather than by laying it before Parliament.

15248. (*By Lord Belper.*) I see this Education Report is presented to Parliament?—Yes.

15249. And printed by His Majesty's Stationery Office?—Yes.

15250. In the same way as the other Annual Report?—Yes.

15251. Therefore, you have no control over the printing?—No.

15252. Or the distribution?—No.

15253. Would you think that it might be desirable, you knowing the people who are interested in these reports, that the distribution should be from the Board and not from the Stationery Office?—I can hardly express an opinion as to that.

15254. I find the leaflets are also printed by the Stationery Office—you are, therefore, not responsible for those either?—Yes, we are.

15255. Where do you draw the distinction? Certain reports are printed by the Stationery Office with which you have nothing to do and certain others that you have to do with are printed for the Stationery Office. Is that it?—Yes.

15256. (*By Lord Barnard.*) The Stationery Office have to get them printed, but it is the same thing?—Yes.

15257. (*By Lord Belper.*) Is this one of the things you make a profit on?—The money for printing that is supplied from the Board of Agriculture vote.

15258. (*By Lord Barnard.*) To sum up your opinion as to the collection and dissemination of information you might give to the Committee what you omitted to state in your description of the department of which you are the head, the fact that all this work is based on Sub-sections 2 and 3 of Section 2 of the Act of 1889 which creates the Board?—Yes.

15259. (*By Mr. Staveley-Hill.*) Recently in the newspapers you published some information in respect to ensilage, and you further suggested that application should be made for leaflets?—Yes.

15260. Have there been any such applications?—We have had a very large number, about 3,000 letters, I think, from persons all over the country, nearly every one of whom are farmers. These persons asked for a copy of the leaflet for their own use. A certain number of persons have written up asking for further copies for distribution amongst their friends, and agents have written to ask for copies for distribution to the tenants on their estates, but nearly every one of the letters show quite clearly on them the mark of the practical farmer or the person intimately engaged in agriculture.

15261. (*By Lord Barnard.*) Before we pass away from the subject of leaflets, I should like to ask you this question—I am not sure that you have not given us some information on it already. I observe that these leaflets are revised from time to time and kept up to date?—That is so. May I make one statement as to the notice about the *Journal*. Every year, in the months of September and October, copies of one of the agricultural returns are sent to every occupier of 20 acres and upwards in Great Britain. There are about 250,000 of such persons, and we always take the opportunity of sending round some notice or other relating to the work of the Board at the same time. Two years ago we sent round a notice about the *Journal*, so that every occupier of 20 acres and upwards received a notice about the Board's *Journal*. We are proposing to do the same thing again this year.

15262. Might I ask you how many publications the Board issue regularly. We have heard of the leaflets, you have mentioned the Annual Report published by the Intelligence Division, and we have also all got in our hands the Annual Report as to the Distribution of Grants; is there any other publication?—There is also the *Journal*. We publish a set of diagrams illustrating diseases of fruit trees which we sell; we also issue two publications, which are given on that list, free.

15263. I see that you publish a list of the Annual Reports and other publications of the Board?—That is so.

15264. Is this paper largely circulated amongst agriculturists?—Very largely. Every person who applies for a leaflet receives in return not only the leaflet but this paper.

15265. So that every step is taken to make all the publications of the Board widely known?—That is so.

Mr. A. G. L.
Rogers.
—
16 July, 1907.
—

15266. In your opinion, and perhaps you are speaking for your colleagues as well, the publications of the Board at the present time circulate very largely amongst agriculturists and probably that circulation is increasing?—They do. I think there are very few places where they are not known, and I think the circulation is very largely increasing.

15267. Will you take your next heading, the relation of the Intelligence Branch to Colleges exemplified by the Milk Testing Scheme and Manurial Experiments?—I wanted to give that as an example to show the way in which the Board, to a certain extent, co-ordinates the work of the colleges, and the way in which I think it might do so further still. When the Sale of Milk Regulations were passed in 1901, it was, of course, quite obvious that since every farmer was responsible for the condition of the milk that he sent to market, it was necessary for him to have some kind of test so that he could see whether the milk which he got from the cow contained more than the 3 per cent. of butter fat and the 8·5 of other solids required by the regulations. Dr. Thorpe spent some time trying to find out a cheap method by which the farmer could test that for himself, but came to the conclusion that every method that a farmer could employ himself was untrustworthy. It was then suggested that something might be done through the colleges, and when we set to work to inquire we found that one college at least had started a scheme already for testing the milk of the farmers in its district at the rate of 6d. a sample, and that one or two other places were working on somewhat similar lines with certain modifications. For instance, Essex was charging 1s., and one of the places in Scotland was doing it for nothing. The Board collected all the conditions under which the different colleges were prepared to test the milk samples, and embodied them all in a series of suggestions which were sent round to all the colleges. We proposed that they should in every case reduce the price to 6d. where they were charging more, and in those cases where they had not got any scheme we suggested that they should start one. By those means we got every one of the colleges and certain other institutions to agree to give a uniform test at 6d. a sample, and in the case of the Midland College to give a test at 9d. for those counties which are not connected with any agricultural college, so that now the whole country is covered. We then drew up a couple of forms which we suggested the colleges might use—forms of report on the samples—and we had them printed and distributed to the colleges. We also printed a leaflet explaining what it is the colleges were now offering to do and distributed that very largely in every way we could think of throughout the country. We sent it not only through the ordinary channels, but we sent large numbers of copies to different bodies like the Aylesbury Dairy Co. We then published a series of articles in the *Journal*, showing the advantages to farmers of having their milk tested in order that they might find out whether the quality of the milk which was yielded by the cow was up to the standard expected. I have since found out that the number of samples submitted to the colleges very largely increased last year, which was the first year this was in working order, and we hope by bringing this scheme more to the attention of farmers continually, whenever opportunity arises, to induce them to send in even more.

15268. The operation of the Board has practically been to bring a cheap method of analysing milk to the door of every dairy farmer?—Yes, and to secure uniformity in the work throughout Great Britain.

15269. That is to the advantage of the Board as well as to the advantage of the dealer?—Yes.

15270. I suppose you are aware that this operation on the part of the Board has had two effects, while benefiting the actual dairy farmer it has, to a certain extent, aroused apprehension on the part of the analytical chemist. Are you aware of that?—Yes. The Society of Chemical Industry sent a letter to the Board formally complaining that the effect of this scheme had been to make several of the local authorities raise the question of the fees which they proposed to pay to their official analysts. These local authorities, having apparently seen that milk could be tested for 6d., said "Why should we pay a guinea," or half a guinea as the case may be, "to an analyst to have an analysis of the milk" which was practically, as they thought, no better than the test supplied by the colleges. The Society brought this to the notice of the Board and complained that our scheme had injured their position. In reply, the Board explained that they did not agree with the view of the local authorities for several reasons. In the first place the tests as carried out by the colleges are not full analyses. They are not chemical tests at all but mechanical tests. Secondly, it is quite obvious that

no farmer could afford to pay the fee which a chemist would charge for testing milk, and that therefore he must have these 6d. tests or no test at all. In the third place we pointed out that these tests were for the farmers' information alone: that they were issued on the understanding that they were not to be used in a court of law.

15271. I suppose if it was really a case that was likely to go before the court the proper course would be to employ a chemist and produce him as an expert witness?—Exactly. The farmer wanted these tests for the purpose of finding out whether the cow was giving the kind of milk he wanted, and consequently a number of tests was absolutely essential. One single test would tell him nothing. On the other hand, a local authority takes samples of milk for the purpose of enforcing the Food and Drugs Acts. If they are found to be defective the seller has to be put on his trial for selling milk which is alleged to be adulterated, and it would be a most improper thing to take a rough mechanical test as evidence in a court of law where if judgment was given against a man he might be ruined. For purposes of that kind an accurate chemical test was the only thing that could possibly be trusted. Therefore the two situations are absolutely different, and we asserted that, whilst we should still maintain our position that the farmers ought to be allowed to have these 6d. tests for the purpose of educating themselves, we should very strongly oppose such a test being used for the purposes of enforcing the Sale of Food and Drugs Acts.

15272. For trade purposes?—For trade purposes.

15273. I suppose something of the same kind is done although perhaps not exactly under the aegis of the Board, in connection with the analyses under the Fertilisers and Feeding Stuffs Act?—Something of the same sort is done by some of the colleges.

15274. They are perhaps not strictly speaking chemical analyses, but some simple explanation of the conditions?—I am not quite certain, but so far as I know I believe those samples are sent up chiefly to find out whether the purchaser is paying a proper price.

15275. We have been told that farmers actually prefer them because they get more informal and useful information through the colleges than they do from the official result of the analyst under the Act?—I have no knowledge of those tests. I can only speak with regard to the milk tests.

15276. What are the manurial experiments to which you refer here?—That was a publication which the Board published in order to secure uniformity. It has been very widely distributed throughout the country.

15277. Now next we come to "Closer relation of Colleges to Intelligence Branch"; you consider that can be done by the publication of reports, and by investigations of local conditions?—I think that has been practically touched upon already. I only wish to emphasise the fact that the Board depend to a very great extent upon the agricultural colleges for the purpose of getting information, and that although the Correspondents are exceedingly useful for many purposes, there are other purposes for which it is much better to trust to the agricultural colleges.

15278. You are of opinion, I think you dropped some words which indicated it, that this relationship of the Board of Agriculture to the Colleges might be made more useful and expanded further?—I believe so, certainly.

15279. That is to say making the colleges as I said just now to a limited extent and for certain purposes agents of the Board?—Yes.

15280. You are of opinion that the Board is in a better position to collect and disseminate information such as that we have just been touching upon than voluntary or local institutions?—Yes. The advantageous position of the Board lies in the fact that they are the central body to which every one of these colleges go sooner or later. Take a concrete example. Say Armstrong College conduct certain experiments; they publish a report; that report is sent round to the agricultural press and to the local press. Two years afterwards it is probably forgotten; nobody knows where to get it; if you write to a bookseller for it he knows nothing about it; if you write to Armstrong College possibly they may have copies still, but possibly the supply may be entirely exhausted. At any rate people do not always remember who it is that published any particular report, and they do not know to whom to apply for copies. If, on the other hand, the person writes to the Board of Agriculture he can find the report in the Board's library; it can be consulted there, and if necessary it can be borrowed from there. But what I should like to point out is that it would be a further advantage that all those

reports should not only be sent to the Board after publication, but should be published by the Board in the first place. The Board should be the central authority which should publish all the information and reports dealing with agricultural experiments.

15281. One aspect of the question which we have discussed in this room already is that the result of all experiments conducted by institutions subsidised by the Board should, in part at any rate, be the property of the Board as public property, and used for the benefit of the agriculturists at large?—Quite so.

15282. Is there any other point in that connection that you wish to mention?—I should like to say that just as we have secured uniformity in the milk tests, so we are trying to secure uniformity in dealing with the subject of insect pests. We find that each county knows perfectly well what pests they have got. The experts at Wye know what they have got in Kent, and the experts in the North of England know what they have got there; but it very seldom happens that the people in the South of England know what people in the North of England have got, and very often they are unable to find the best means of discovering it. I suggest that all this work should be done through the Intelligence Division of the Board of Agriculture.

15283. I suppose the idea you have in your head would include informing one college of what was being done at another, so as to prevent unnecessary duplication or overlapping?—Yes.

15284. Of course it might be necessary that two colleges in totally different parts should be doing the same work in order to find out whether the same result is produced under different climatic and geographical conditions?—Undoubtedly; but the work in one part would not be useful without a knowledge of what was being done in the other part.

15285. Is there anything that I have not touched upon on this particular branch of your *précis* that you would like to add?—I do not think so.

15286. (*By Lord Belper.*) No doubt you quite understand it is a great advantage that the Board should be informed of all the experiments, and have a knowledge with regard to all the experiments, that are carried on at the different colleges; but do you propose that the Board should distribute the information about that locally as well as generally, because it does not seem to me, from our experience, that the Board is the best means of distributing knowledge, especially locally. The object, in the first instance, of the experiments is to put the farmers in the neighbourhood in possession of everything that has taken place, so that it may be useful to them in the conduct of their business; but surely that could be better done by the college itself than by having the thing published by the Board and then distributed by the Board?—My idea is that the thing should be published by the Board, and the distribution locally would, of course, be done by the college which carried it out. If Armstrong College, for example, conducted an experiment and the reports were published by the Board, of course it would be to the interest of the Newcastle College to distribute that in their own district.

15287. You would take upon yourself the expense of publishing these papers, and sending to the college which had initiated the experiments any amount of copies that they might require for local distribution?—Yes. We have already started that to a certain extent. I daresay you will have noticed that the reports of the Poultry Department at Reading are all published by the Board now? They were formerly published separately, and even now we have a certain number of copies printed which we send to Reading for distribution; but the information appears in the Board's *Journal*, and is therefore distributed to all parts of the kingdom, and is readily available to anyone wishing to consult the report again.

15288. Let us see what the financial aspect is. Do you propose to take the whole of the cost of publishing them?—It would depend, of course, a great deal on the amount of publication it was proposed to do.

15289. It is a matter which would be extremely favourably received by the colleges if you were going to relieve them of the expense of publishing. If you are going to do it merely in order that the Board may be able to disseminate the knowledge amongst other counties as well as amongst their own, of course the college might not look so favourably upon it, at all events if your publishing it cost no more than the cost of publishing it themselves would amount to?—It would be a matter for consideration.

15290. Yes, but I want your idea. It seems to me if the Board publishes, they must take the responsibility and pay for the publication, possibly charging the counties a certain amount for the copies and for the information they supply. But, at all events, it seems to me if you are to be responsible for the publication you should also be responsible for the cost of the publication. What do you say to that?—Yes: if the publication were made through the *Journal* of the Board of Agriculture that would be so.

15291. There would be certain to be a feeling of this kind, would there not: "If we had done it ourselves it would have been done more economically than the Board have done it." I do not say the feeling is justified, but people often say that kind of thing, that if they had done it themselves they could have done it much more economically. But they would not object if the cost was borne by the Board?—It would, of course, have to be done by some arrangement.

15292. No doubt it would all be part of the wide financial arrangements that may come about in the future?—Certainly.

15293. But you think it is desirable that it should be done in that way?—Yes.

15294. I suppose you have no suggestion to make further than you have done with regard to the point of view you were discussing as to the distribution of these papers which are published by your department?—Do you mean with regard to the Annual Report or to the leaflets?

15295. With regard to any of them. I mean, assuming there can be some improvement in the system of the present distribution, have you any suggestion to make?—I have no suggestions to make with regard to the Annual Report, because that is a grant made to us by the Treasury.

15296. That depends on the Treasury?—That depends on the Treasury entirely; I cannot speak as to that at all.

15297. Now with regard to the others?—With regard to the distribution of the leaflets and the other publications of that sort which are actually the Board's own publications, I have no further suggestions to offer, except to say that I should be glad if anybody would make suggestions to me.

15298. (*By Lord Moreton.*) When you advocate the Board of Agriculture publishing the results of the investigations and experiments carried on at the colleges, would you also desire to see being made public in the same way the investigations and experiments that are carried on by the various agricultural societies?—Yes, to a certain extent, at any rate.

15299. How far do you think the agricultural societies would accept that suggestion with equanimity?—Of course that opens up the whole of the question as to the way in which agricultural experiments are carried on in this country, and how they ought to be carried on.

15300. Let me suggest this. Supposing an agricultural society has carried on a long series of investigations of a particular kind, then it seems to me the Board of Agriculture, just at the moment the society was going to gain some "kudos" and was going to publish a matter of very great interest to its members, a matter which has been the result of a considerable expenditure of time and money, would step in, because that is what your suggestion seems to involve, and take away the "kudos" that the society itself would obtain?—Would it take away from the "kudos" of the society if the Board were to publish the results of the investigations of the society and make them wider known than they could do themselves?

15301. I am only speaking on my own behalf, but as a very old member of the Royal Agricultural Society, it seems to me it would be rather hard, after that Society had spent much money and a great deal of time on investigating some particular point, that that information, instead of appearing in our own publication to our own members, should appear in a publication of the Government department?—Of course, in the case of the Royal Agricultural Society of England the case is entirely different, because they have a publication of their own which is a standard publication.

15302. I think the Bath and West and the Highland also have publications of their own?—Yes.

15303. What do you say with regard to those societies or bodies which have publications of their own?—Their annual publications stand in exactly the same position as the *Board of Agriculture Journal*. They are publications which everybody knows about, and which everybody can consult by going to any good library.

Mr. A. G. L.
Rogers.

16 July, 1907.

Mr. A. G. L.
Rogers.
—
16 July, 1907.
—

15304. Therefore I rather gather from what you say now in those cases where there are no publications the question is on a different footing?—Quite.

15305. (*By Lord Belper.*) To make it quite clear, you would publish these papers under the name of the college who had made the experiments; or, if it was a case of research, of the person who had made the discoveries?—Of course.

15306. They would have the full credit of it, although they were all published through your publication department?—Yes, certainly, just as an author gets the full credit for a book he writes, although it is published by a publisher.

15307. You were talking with regard to the Sale of Food and Drugs Acts. The Board of Agriculture are responsible for dealing with the administration of those Acts, are they not?—Yes, and the Local Government Board.

15308. Is the Board of Agriculture solely responsible, or is it the Local Government Board?—The Local Government Board is also responsible.

15309. In your earlier evidence you gave some information with regard to the administration of those Acts. What is the distinction between the part of the work which you deal with, and the part which the Local Government Board deals with?—Roughly speaking, the Board of Agriculture represent the farmer, the producer, and the Local Government Board represent the consumer.

15310. I think all the regulations at all events have to go through the Local Government Board, have they not?—Not the regulations of our Board.

15311. We had the other day a number of new regulations with regard to carrying out the Food and Drugs Act. Were those issued by the Board of Agriculture?—The Sale of Milk Regulations, 1901, were issued by the Board of Agriculture.

15312. With regard to the adulteration of spirits and those sort of things, do they come under your department?—No, not at all; that is the Local Government Board.

15313. And the weights and measures?—That is the Local Government Board also.

15314. So I thought; but I did not gather from your evidence that you made any distinction between them?—There are a very large number of subjects which the Board of Agriculture deal with, though we do not administer the Acts of Parliament concerning them.

15315. The administration is by the local authorities, but before they come to the administration, there are certain regulations which have to be approved by some Government department. In the case of a great part of the duties under the Food and Drugs Acts, that, at all events, is under the Local Government Board?—That is so.

15316. There are certain things which you solely deal with?—Yes.

15317. Would you just mention what those are?—They are the Fertilisers and Feeding Stuffs Act and certain parts of the Sale of Food and Drugs Acts—I have forgotten what the clauses are now.

15318. Certain analyses, I suppose, for discovering adulteration in butter and things of that kind, does that go through you or does that go through the Local Government Board?—Through us.

15319. Is the line between the two departments quite clear?—It is defined by the Act of Parliament.

15320. I know; but sometimes Acts of Parliament do not foresee what is going to take place afterwards, and there is sometimes considerable confusion between two different Government departments dealing with Acts which are administered by the same authority and through the same officers. Do you think there is any confusion in this case?—I have never heard of any difficulty between the two departments.

15321. (*By Mr. Acland.*) Is your view as to publication of results of research by the Board of Agriculture rather your own opinion, or has it been considered as a practical matter by the Board of Agriculture. Is it a pious opinion of your own, or do you think it is likely to be possible to carry it out?—It is a pious opinion of my own; how far my opinions may influence the Board I do not know.

15322. The Board has not made any enquiries or efforts yet to see how far the authorities concerned would welcome that idea?—No.

15323. You, yourself, from your experience of these bodies, do not think it impossible?—I do not think it impossible. I think there are a good many difficulties,

but I think that is possibly one of the things which this Committee will consider.

15324. Have you ever thought of having stands or stalls at big agricultural shows for the purpose of distribution and explanation of the results of experiments and research in the country?—We have had the pavilion at the Royal for the last three or four years—four years I think it is; we have been represented at the Yorkshire Agricultural Society for two years; last year we were also represented at the Lincoln Show; and this year, in addition to the Royal, we had a stand at the Somerset Agricultural Society, at the Bath and West, and at the Highland, and we are going to have one at the Yorkshire Society's Show in August.

15325. (*By Professor Middleton.*) Those are practically all the shows lasting three days or more?—Most of them have been four to five day shows.

15326. I mean that we are represented at all the big shows?—Yes, at all the long ones.

15327. (*By Mr. Acland.*) Do you consider that the expenditure in that way has been justified?—Quite, I think it has been most usefully employed.

15328. Do you distribute there not only your own publications but the publications of the other bodies in the way of research and so on as well?—No, only our own.

15329. Do you think it would be possible to work in with other bodies in that direction, such as Newcastle and Leeds and so on, and distribute their publications in addition to your own?—I think it might be done, but with the present method of printing and publishing these leaflets it would be very difficult. When we were down at Wells, for instance, we might have had some of the pamphlets of the Leeds University to distribute there, but I do not think there would be at present any very great demand in Somerset for these pamphlets; and if we were distributing in Yorkshire, of course the Leeds University would have their own stand there themselves.

15330. No efforts have been made to make your stands at these shows centres for the distribution of the results of all the research in the country?—No.

15331. Do you think that that would be a possible development?—I think it might be, but I think as it is at present arranged it would be rather difficult. I think we want to get into closer connection with the Colleges before we attempt anything of that sort.

15332. You are particularly interested in history, is not that so?—I am.

15333. Do the results of your historical study give you any views that you would like to express to us as to the particular needs for aiding agriculture and as to any particular ways in which it might be aided?—I am afraid I have hardly ever looked at the subject from that point of view and I could not give an answer off-hand.

15334. If you were asked to make a statement justifying the giving of more State money you would be able to draw upon your historical knowledge?—Yes, I should be quite prepared to make a statement on that point.

15335. (*By Professor Middleton.*) Lord Moreton asked you about the publication of the results of work done by agricultural societies, but would not such work have quite a different relation to the Board from the work which is done by colleges subsidised by the Board?—Certainly.

15336. I do not think you meant to suggest that all the publications of the colleges should be published by the Board of Agriculture?—I hope I did not say so, I did not intend to suggest that their leaflets should be so published.

15337. I wanted to make it quite clear that you do not suggest that all the material which is at present published by the different colleges should be published by the Board of Agriculture?—No, that is not so.

15338. Your suggestion referred to selected material entirely?—Yes.

15339. (*By Lord Belper.*) On that I should like to ask, would it not be putting a college in a difficult position if they had to wait before publishing these things for the Board of Agriculture to decide whether certain things should be published or not, and then have thrown on their hands to publish certain things that they might not at the moment have made arrangements for publishing?—The Board of Agriculture give certain grants to the agricultural colleges, primarily no doubt, for educational purposes, but to a certain extent with an eye to questions of research, and it seems to me a good thing that

the Board of Agriculture should have some controlling voice upon the research that is carried out and upon the publication of those reports.

15340. I quite understand that, but it seems to me, as I said before, that you may have experiments with regard to a particular part of one county, the reports on which would be extremely useful for the county and are certainly useful for the purpose of education in that county; but it might be that some similar experiments in another county at the other end of England, which had already been published by the Board, would not be useful in that other county, because local knowledge may be different and there may be different circumstances that you would not wish entirely to rely upon for your own county, and you might think it desirable to carry on your own experiments. If those are not published by the Board, although they are going to publish all the other experiments, I should very much doubt if it is a desirable system to carry out from my point of view?—I do not think the system would really be difficult. I am afraid the probability is that I have not made my idea very clear to you.

15341. (*By Lord Barnard.*) Perhaps I have helped to convey a wrong impression. The suggestion I wished to put to you was in the case of all societies, particularly those which received grants from the Government and, of course, that would not apply to the Royal Agricultural Society at all; but in the case of all institutions at the present time who receive subsidies from the Government through the Board, you think that the Board should have some proprietary interest in their publications. I do not for one moment intend to convey by my question that the institution should be debarred from equally making any use of their own publications, but merely that the Board should have a right as well as the institution to the results of their experimental and research work?—Exactly.

15342. (*By Lord Belper.*) Then upon that, may I ask you whether it would not be far better that there should be no special publication by the Board of the experiments which are made by a particular institution, but that the colleges should publish them and that they should in all cases send a copy of their publications to the Board of Agriculture to make whatever use they like of in the way of disseminating the knowledge. That seems to me the simplest plan. If the Board of Agriculture when they have got these results are going to say we will not publish this and we will not publish that, it seems to me the simplest thing is that they should not publish anything at all, but should have copies of everything sent to them which they could reprint if they thought it desirable?—I do not think my suggestion implies guiding or controlling the local institutions in the manner you fear.

15343. It seemed to me that your object is entirely met by saying that in all cases the Board should have the information given them and copies of any reports or results of experiments?—And that the Board should see to the distribution of those reports throughout the country?

15344. Yes, and make use of them in any way they like?—The objection to that is that supposing a person wishes to make a collection of reports on experiments conducted by the different colleges in England, he would find that very nearly all of them are printed in different forms. One is a little bigger and another is a little smaller, and that, in itself, is a disadvantage, whereas if they were all printed in the same form and of the same size, they would be much easier to follow as well as to bind.

15345. There is a difficulty so far as the colleges are concerned if they do not know when their reports are drawn up and before they are published whether the Board is going to publish them or not. I leave that to be met by a suggestion, but I am bound to put it from the point of view of a college. Anybody who knows anything about publishing knows that people can make very economical arrangements if they can estimate the amount they are going to have printed within a certain period, but if they have a great amount of information thrown on their hands at a moment's notice it may be very expensive and inconvenient to publish it at such short notice?—That is so.

15346. (*By Mr. Latham.*) Will you look at these cards (*handing some milk test certificates*)?—Thank you.

15347. If a Show makes an application to you to take a stand there, are you always willing to accede to the application?—Not always, because we have only a very small staff. Besides the three assistant heads we have only four clerks, and I have had one of them away all last week at the Highland Show, while, as you know, Mr. French has been here. That takes 50 per cent. of the

staff off, and we cannot get through the whole of our work in consequence.

15348. Mr. French being here is only a temporary thing. There is no way of introducing these things so well as in the show yard, is there?—I quite agree, and if we could spare anyone, we should certainly do it.

15349. With regard to those cards that I handed to you, do you not think that is as far as the small local authorities should go?—Just giving that information on the cards? I think it would be very desirable, and I think it is done in a good many places, that they should give advice as to the probable causes of deficient milk supply.

15350. That is not what I mean. I mean the way in which the milk is analysed by these small authorities is very often misleading and rather dangerous?—You mean under the Sale of Foods and Drugs Act?

15351. Yes. Farmers are often led astray, whereas had they proper analyses if would prevent them feeling that they are in a better position than they really are?—The analyses under the Sale of Foods and Drugs Act are always made by a chemist.

15352. To a certain extent I agree. We have had a witness before us who has very graphically described what you have described, and I agree with every word of it. We have always felt if farmers only knew as much as is on those cards that I handed to you they are apt to be often more self-confident than perhaps they ought to be?—Yes, I think it is very likely if a farmer has had the milk of his cows tested frequently and knew the sort of milk they were giving he would face the ordeal of an accusation in court with much more confidence than if he had not had those tests taken.

15353. I myself have formed very strong conclusions as to it that perhaps a little learning is a dangerous thing, and that if a farmer had these cards giving him this kind of information he is not so safe as if he had a qualified analyst sent down to him, such as Dr. Voelcker?—That is quite possible, I think.

15354. Have you anything to say with regard to market reports?—They are not issued by the Intelligence Branch.

15355. No, but there is an impression that they are not quite so useful as they might be. Do you think they could be enlarged?—I think it would probably require a good deal of additional organisation, but, of course, as they are not issued by my department I am not really familiar with the details.

15356. No, but I dare say you have heard it expressed that they are not as thorough as they might be?—Yes.

15357. Do you think they cover the ground sufficiently for the ordinary agriculturist to take sufficient notice of them?—I think that all the publications of the Board are capable of improvement.

15358. (*By Lord Barnard.*) Now, to go to the other part of your *précis*, I understand your department collect agricultural information from various foreign countries?—That is so.

15359. Does that extend to British Colonies?—Yes.

15360. Are you in touch with the agricultural departments and the officers of the various agricultural societies in the Colonies?—We receive all their official publications.

15361. You have to communicate with them through the Foreign Office, I suppose?—We communicate with the Colonies through the Colonial Office.

15362. Yes, but with foreign countries how do you get into communication with them, if you want to know what they are doing on any particular subject?—Of course official information is obtained through the embassies and consular service. But we get a good deal privately through the officers of foreign departments.

15363. Do you furnish foreign countries with what is done in this country?—Officially?

15364. No, unofficially?—Yes, I know several gentlemen connected with agriculture in foreign countries and we frequently correspond with each other.

15365. I understand you do not speak from personal knowledge of the agricultural organisations of foreign Governments?—No, I have no personal knowledge. I have never been abroad to inspect any of these bodies.

15366. Your information is merely obtained from reading their reports?—The only information that I can give is that supplied by the foreign authorities themselves.

15367. It is really very important, to my mind at any rate, that this Committee should have such information as the Board of Agriculture can give it on the subject

Mr. A. G. L. Rogers.

16 July, 1907.

Mr. A. G. L.
Rogers.
16 July, 1907.

referred to us, that is to say, the facilities afforded for scientific and technical instruction in agriculture. Can you give the Committee any evidence, not from every country in Europe, but from any country that you would like to select as being most useful to us as an illustration of what is done by foreign countries in this respect?—I have a good deal of information on the subject, but I am afraid I am not quite sure what the information is that the Committee want.

15368. They do not know what they want really. They really want to know what you can tell them. You know quite as well as we do the terms of the reference to this Committee. The information that the Committee would like is information as to what other European countries, and other foreign countries I might say, including our own Colonies, do in the way of encouraging scientific and technical instruction in agriculture, and what the result of that encouragement is. Would you take one selected country first?—Perhaps I might put it rather from this point of view, that the information which I am able to give and of which I have been making a study for some time past, is rather the relation of the different departments of agriculture in foreign countries to agricultural education.

15369. Please give us your views in your own words?—In that case perhaps I might begin with Belgium, which I have selected to give first because it seemed to me that Belgium is the country in which agricultural education is most highly organised, in one sense at any rate.

15370. Before you describe them I suppose you are familiar with all the places in this country and the systems pursued there?—Yes.

15371. So that you can compare them?—I am afraid I shall find it exceedingly difficult to compare the systems abroad with any of the systems practised here, because my feeling is that they are entirely different.

15372. What we should like to know first is what the system is in any foreign country that you like to select to begin with, and then if you will indicate to us your view as to how that system, or any part of it, could be adapted to this country. Take Belgium first, you were beginning with Belgium?—In the case of Belgium I suppose the most distinctive thing about Belgium is that every kind of agricultural education is more or less organised, and organised under the Department of Agriculture. With the single exception of a certain kind of intermediate education, I believe everything emanates directly from the Government. There are a certain number of private schools which are subsidised, and, of course, the University of Louvain supplies a certain amount of agricultural education. But otherwise everything from Gembloux through all the different grades of education down to the most elementary and simple, such as the instruction for soldiers and the instruction for farmers' wives and the lectures given by the travelling professors are all organised by the Government.

15373. When you say organised by the Government do you mean that the schools are established by Government and supported by Government?—Yes.

15374. I do not know how far you would like to go. Would you agree with me in thinking that such a system would not be suitable to our English customs?—I quite agree.

15375. Could we, with advantage, copy any modification of such a system, that is to say, by further extending the influence and support of the Board of Agriculture over all these institutions?—Yes, I think a great deal might be done in that way.

15376. We must bear in mind that in England all the organisations with which we are now dealing have sprung up in the last 20 years?—Yes.

15377. In France and Belgium, for example, has the system been in force longer there do you know by any chance?—The present system?

15378. Has there been a system? There was no system at all in England 20 years ago?—I should say practically all the organisation of agricultural education that exists in France and Belgium, and almost every European country, has sprung up within the last 20 or 30 years.

15379. So that we are not peculiar in that respect at all?—No.

15380. But they have gone very much farther ahead of us in the way of Government activity?—Quite so, if you consider Government activity going ahead.

15381. We have had very clear information given us as to the amount of money at the control of the Depart-

ment of Agriculture and Technical Instruction in Ireland. We have also had some evidence on a similar point as to Scotland. As you are aware, in the case of Ireland, that the sum expended on the agricultural industry is incomparably larger than that spent in England?—That is so.

15382. Do Belgium and France in any way resemble Ireland, or do you think that they spend even more than is spent in Ireland?—They spend a great deal more than is spent in Ireland.

15383. Then we are so much behind France and Belgium in public expenditure?—Yes.

15384. You are familiar with the statement at the end of this Report on the Distribution of Grants?—Yes.

15385. You are aware that the sum provided by the Treasury last year was £10,500?—Yes.

15386. And that the sum voted by the County Councils amounted to just under £84,000?—Yes.

15387. Making a total of less than £100,000?—Yes, a little less than £100,000. It would be practically impossible to find out how much money is spent by the local authorities in France on agricultural education.

15388. (By Mr. Acland.) Does that apply to other countries too?—Yes, I think it is practically impossible; I do not know of any means by which one could find out, but I should say by far the greater amount is given by the central Government in foreign countries. Nearly all of it comes from the central Government, and only a comparatively small amount from the local authorities.

15389. (By Lord Barnard.) You have studied the administrative system in France and Belgium, and probably other countries?—Yes.

15390. Is the assistance given by the French and Belgian Governments to the agricultural industry out of all proportion to the amount that is given by them to other industries, or are they equally generous to all the other industries in the State, do you know?—I should think that they probably give rather more to agriculture than they do to the other departments, because agriculture is treated in these countries as a big and important industry.

15391. We all know that with regard to shipping in France every effort is made by the Government to encourage the shipping industry, both the shipbuilding and the marine industry generally. What I want to know is, are they still more generous to the agricultural industry, or is their subsidy to agriculture, roughly speaking, on a par with the subsidy to the marine trade?—I could not say how much is voted towards that, but I know that a very large sum of money is given towards fostering agriculture in all these countries, and yet in France, just as in England, agriculturists complain bitterly that they contribute the greater part of the taxes and get only a small amount of the advantages.

15392. Can you give us any information on this point. Are these schools and institutions for educational purposes in France and Belgium very largely taken advantage of and appreciated by the agricultural classes?—My general impression—I am afraid it is only my own personal impression—is that on the whole they are not.

15393. That is the impression that I derived from a Foreign Office publication on agricultural education in France that I have been reading?—Yes. One of the tests for a thing of that kind is to consider not only how many persons attend the colleges, but what occupations they take up after they have left the colleges—what they go to. We have it on evidence given at the International Congress on Agricultural Education in 1905 that in Belgium only 5 to 10 per cent. of the students who pass through Gembloux take up agricultural pursuits when they leave.

15394. That would be an argument against too lavish a creation and support of these institutions by the State?—I think it would be an argument against giving an agricultural education to a number of persons who were not interested in agriculture. At Gembloux, for instance, they create a very large number of what are called agricultural engineers, and a very large number of the persons who pass through that institution become engineers.

15395. How can you pledge a youth, and still less, how can you pledge a boy, that he will take up agriculture?—I do not think you can do that. But I think you could affect him very largely by the kind of education that you give him when he is there.

15396. On the subject of the usefulness of these institutions, am I right in thinking that there is a doubt about the usefulness of similar institutions in America?—I should not have thought that the thing applied to America in the

same way. I am talking, of course, for the moment only of the question of higher education. The education in the intermediate schools in the French-speaking countries like Belgium and France is of quite a different order. I think, as far as France is concerned, that the schools which are known as the *école pratique* are admitted to be a failure.

15397. Does what you have said with regard to Belgium and France apply to Germany?—The system in Germany again is almost entirely different, because the organisation there is connected with the university system rather than with the Government system. In Belgium, of course, a certain amount is done through Louvain; in France comparatively little is done through the universities. In Germany nearly everything is done through the universities or institutions connected with the universities. Very little is done actually by the Government itself. For instance, even the popular lectures which are given by the *Wanderlehrer* in Germany are organised, I believe, by the agricultural societies and chambers of agriculture, and, though the Government give a subsidy, the organisation is almost in the hands of the agricultural societies. That is obviously an entirely different state of things to what prevails either in France or in this country.

15398. Do the separate North German States regulate this question each for themselves, do you know? I mean to say Prussia, Saxony and so on?—Yes. The German Empire has practically no system; they are nearly all done by the kingdoms.

15399. Do you know whether in any of these States that you mentioned in which subsidies are given to the societies those subsidies are substantial or not?—I believe they are, but I do not know what they are at all.

15400. You do not know whether any of these North German States spend large sums of money on agricultural education?—Yes, they spend considerable sums of money.

15401. (*By Professor Middleton.*) The Royal Agricultural High School at Berlin, for example, costs the Government about £27,000 a year?—Yes.

15402. That is one institution, and there are many others?—That is the Prussian, not the Imperial.

15403. (*By Lord Barnard.*) Are these universities subsidised by the State? Whence do they derive their resources?—I do not know, but they were all founded by the State originally.

15404. How about Austria, is that much in the same position as Germany?—Yes.

15405. Austria is very largely an agricultural country, is it not?—Very largely, and it is a country where there are a very large number of big estates, which is a state of things quite different from what prevails in Germany. I do not know whether you would care to hear it, but I think the best description of what goes on in Austria is given in a speech given by Professor Liebenberg.

15406. If you think it bears on the subject of our inquiry I think we might have it?—I think it gives a very accurate description of affairs; but I do not think the state of affairs in Austria is one to be copied.

15407. Perhaps you will summarise it then?—Briefly, although they have a very complete system of higher and intermediate education, the reason it is not a success is that all the persons who pass out of the lower grade of schools try and take positions which are intended to be filled by the students from the rank next above them. The intermediate people expect to fill the posts which ought to be held by the persons who have passed through the highest rank of all, and consequently the result is that everybody is filling a post for which he is not quite fitted.

15408. I believe the Austrian Government subsidise horse-breeding very largely, do not they?—Yes.

15409. Is that treated in any way as it is in Ireland?—They have a school there, but I am afraid I am not able to give very useful information about that.

15410. I suppose we need not consider Russia or Turkey, need we?—I do not think there is any education at all in Turkey. There is some in Russia, but I do not think there is any particular which we would care to copy here.

15411. We have been told that every man who passes through the ranks in Italy receives instruction in agriculture. Are you aware of that?—Yes.

15412. Could you just tell us what the reason for that is. Do you know at all?—The reason is, of course, really that the Government want all the men who pass through the

Army as far as possible to go back to the country again, and not to collect in the towns. *Mr. A. G. L. Rogers.*

15413. They are drawn from the country principally?—They are drawn from the country principally and they want them to go back to the country, and therefore they give them a kind of instruction which will be of use to them and enable them to go back to the country again. A good deal of the policy of the countries where there is conscription is guided by the question of finding recruits for the Army.

15414. The object of the Government is to make conscription as little objectionable as possible?—Yes. I do not know whether you have seen this paper [Cd. 3511], which has just been published by the War Office. There is at the end a memorandum written by Commandatore Vigone.

15415. One of our witnesses mentioned him?—It is mentioned here that the original of the memorandum was forwarded to the War Office by Mr. W. F. Reid.

15416. Yes. I suppose we need not consider Spain either?—I do not think the system in Spain is applicable to this country.

15417. I do not know whether there is anything of the kind in Switzerland?—Do you mean the education of the army?

15418. No, agricultural education generally?—Yes, they have a very active agricultural department in Switzerland.

15419. Are there any features there which might with advantage be either on the one hand avoided, or on the other hand copied?—I am afraid I do not know sufficient of the details about it, but I know their Agricultural Department is very energetic.

15420. Can you tell us anything about Denmark? We have heard a great deal about Denmark here?—The most important thing about Denmark, I think, is the education given in the *Landbrugsskoler*, which is theoretical education. If the Committee would like it, I should be prepared to make up a memorandum with regard to that.

15421. Yes, I think it would be an advantage if you would prepare a memorandum on Danish Agricultural Education?—Yes, I should be prepared to do that.

15422. Do you think you could extend that by tabulating what is done in all other countries of which you have information?—Yes, certainly.

15423. Of course you are aware that in an inquiry of this kind, it is not at all uncommon to send one or more members of the Committee to foreign countries which are especially well known in connection with a particular subject?—Yes.

15424. We have never suggested such a thing on this Committee, although it is one of the most important points that we have to consider in my judgment, because we understood that the Board of Agriculture had complete evidence on this subject here in London?—I believe we have.

15425. I suggest that you should prepare a tabular statement containing all such information as the Board of Agriculture have and that you will cause it to be circulated to every member of the Committee?—Yes. (*Statements on the condition of agricultural education in some thirty countries were subsequently prepared by the Intelligence Division of the Board and forwarded to the Committee.*)

15426. (*By Mr. Medd.*) There is nothing for us to learn from Belgium so far as your experience goes?—I think the only thing we could possibly learn from Belgium is the instruction for women and girls; I do not think there is anything else.

15427. With regard to boys' schools, they have not anything to teach us?—No.

15428. (*By Lord Belper.*) Do those reports from which you are going to draw the information to lay before the Committee, give information as to how far agricultural education is taken advantage of by those for whom it is intended, because I understood you to say in your examination that in one or two of those cases it was an absolute failure; I think that was the case with regard to Belgium?—I gave entirely a wrong impression if I gave the impression that the thing was a failure. I think I used the expression failure about something else. What I wanted to say was that at Gembloux, which is the highest place of education in Belgium, only five per cent. to 10 per cent. of the students go back and take up agricultural pursuits, but if I were to make the deduction from that that the thing was a failure, it would be wrong. The true deduction I believe is that the kind of education given is a sufficient training for other

Mr. A. G. L. Rogers.
16 July, 1907.

Mr. A. G. L. Rogers.
16 July, 1907.
kinds of pursuits. A great many of the men who have been through the training at Gembloux are not agriculturists at all; they never wanted to be; they take up pure science. It would be exactly the same if you took the students at Oxford and Cambridge, and, with regard to those who pass through the natural science schools, you said "Only 2 per cent. of those go into agriculture and therefore 98 per cent. are a failure."

15429. If you expend State money for the purpose of instructing people in a business in which they are going to pass their lives, in agriculture, and very few take advantage of it, then I should say that to a certain extent the system is a failure. I do not see how you can draw any other deduction. It is no advantage if the people to whom you give it are not taking it up for the purposes of their profession, but for scientific purposes. I take it the object of the State spending money in agricultural education is to teach those who are intending to take up the particular pursuit for which the education is provided?—It is almost impossible to make any comparison between the state of affairs in this country and the state of affairs in a foreign country. There are two institutions, we may say, which have the same name, both called the Agricultural Institute, one in Belgium and one in England, but that is all we have in common. Their objects and aims, and the type of student that goes to them, are entirely different, and a comparison between an agricultural college in a foreign country and an agricultural college in England is altogether fallacious for that reason; they set about to do something different from what we set about to do.

15430. I find it rather difficult to understand because I took down some of your words. You told us that in Germany it was done through the universities and that the organisation was in the hands of the agricultural societies and that it was tolerably successful, and then you said that in Austria it was not a success, and I under-

stood you to say that was because the land was in the hands of large owners and the conditions different from those in Germany. I may be wrong, but that is what I gathered?—I am sorry if I gave you that impression.

15431. (*By Mr. Medd.*) Is it not the fact that the majority of the students from the highest colleges in England do not become farmers, and that the same remark applies to Grignon and to Beauvais in France?—Nearly 50 per cent. I think.

15432. You think 50 per cent. become farmers?—Those are the figures I have been given; I can verify that.

15433. Your experience is wider than mine, but I should say that neither from Wye nor from a college like Cirencester do anything like half the students become farmers, actual cultivators of the soil—not land agents or teachers, I refer purely to farmers?—May I read this little introductory remark of Prof. Wallace's to the Record of Students who Studied in the Edinburgh University Department of Agriculture? He says: "The majority of students who have come to the class of Agriculture and Rural Economy have been the sons of farmers, and others associated with land, who have studied but for one or two winter sessions and have generally gone back to farm at home under the practical guidance of their fathers."

15434. We were only speaking of England and France. I think the conditions are wholly different in Scotland?—A good many of those students were Englishmen who have gone to Scotland.

15435. (*By Lord Barnard.*) Will the memorandum you are going to hand in include India. Have you any information as to India?—I do not know that we have any information, but we can get it if we have not.

15436. (*By Mr. Medd.*) Have you visited any *écoles pratiques*?—No.

THIRTIETH DAY.

Wednesday, 17th July, 1907.

PRESENT :

The Lord BARNARD (*in the Chair*).

The Lord BELPER.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. T. H. MIDDLETON, Assistant Secretary to the Board of Agriculture and Fisheries, formerly Professor of Agriculture, Cambridge University, examined.

Mr. T. H. Middleton.
17 July, 1907.
15437. (*By Lord Barnard.*) You are now Assistant Secretary of the Board of Agriculture?—I am.

15438. Perhaps you will tell the Committee very shortly what your career has been before you took up that appointment?—From 1889 until 1907, that is until the present year, I have been a teacher of agriculture. I can go a little further back, if you wish.

15439. If you please.—I am the son of a Ross-shire tenant farmer, and was brought up upon a farm. I received my school education in Edinburgh. After leaving school I went almost as a matter of course to a Scotch University. I graduated at the age of 19 and then I went back to farming.

My intention was to farm in Scotland. I had occasion to carry out, in connection with the Highland and Agricultural Society, a number of demonstration plots. I became very much interested in this type of work, and I saw if I was to get any direct advantage from science as a farmer that I must get more first-hand information. I therefore went back to the University of Edinburgh with the object of getting information. I had no intention at the time of taking a prolonged course there, or of graduating. As a matter of fact I did graduate at Edinburgh, but I still intended to become a farmer. I then got an offer of an appointment in India. Curiously enough, this appointment was due to the action of our chairman, Lord

Reay, who was then Governor of Bombay, and who persuaded one of the Indian Colleges to establish an Agricultural Department. After some consideration I decided to go to India, and having taken to a teaching career I continued in the teaching profession. But what I want to emphasise is this, that I studied agricultural science for the sake of acquiring information which I expected would assist me as a farmer. I should like to add that I had a very good general education and scientific education before I had any close connection with farming, but I found that after I had got some practical knowledge of what the farmer wants, when I went back to the University a second time, I learnt more in a month than I learnt in two or three months on the previous occasion. I have always been, therefore, a strong advocate for the study of practice before the completion of the course of theoretical study. I went first of all to India, and organised a department of agriculture in an Indian college, the first of its kind in connection with an Indian university. I was there for six and a half years. I came back as lecturer in agriculture to Aberystwyth, where I was for three years. I went from there to the Armstrong College, then the Durham College of Science, for about three years. I have been in the University of Cambridge for rather more than five years, and recently I came from Cambridge to the Board of Agriculture.

15440. If I may say so, you have really raised yourself to your present position by your own industry and attainments?—Well, I do not know. As a boy I had as good opportunities of getting an education as any boy had. I got the best school education and six years' university education.

15441. Your career illustrates very strongly, in my judgment, the type of student whose future we ought to have very distinctly before us in considering the report we make, and we are very much indebted to you for the information you have given us, and also your own private views that you have expressed on the subject of the training of agricultural teachers?—I might just add one word. I think, perhaps, that I may claim to represent the agricultural student, and I may say that what the agricultural student wants is information on which he can depend, and if we provide the kind of knowledge that the agricultural student asks for and requires, we shall have him coming forward in increasing numbers to acquire this knowledge so that he may utilise it.

15442. Now will you carry that a step further and tell us from your experience of these various colleges to which you have referred, whether you think they are providing the kind of instruction and information which the student wants?—I should prefer not to give evidence on that at the present time. I will do so, perhaps, later on. I intend in my evidence to deal chiefly with two points. First of all I wish to continue what Mr. Rogers was saying and had not time to finish last night about education in other countries, and I also want to say something about the development of the department at Cambridge, as that forms an illustration of a department in our own country. I am sorry that my notes on foreign countries are rather scrappy, as I had not intended to give evidence on this subject. I will take types of agricultural education in some foreign countries which I have seen and of which I have read. First of all take the kingdom of Saxony where I happened to spend a day a fortnight ago. Saxony is, roughly, about the size of Yorkshire, and it has a population dependent upon agriculture, of about 500,000. Yorkshire will have an agricultural population, that is including those actively engaged in agriculture and those dependent upon agriculture of about 300,000, so that Saxony has got a much larger agricultural population than Yorkshire. As a matter of fact, the agricultural population of Saxony is, I think, about twice as dense as that of England and Wales. To provide for this population Saxony has, first of all, the University of Leipsic, with an agricultural department. They have there studying agriculture about 200 students during the winter and 150 during the summer term. The University is one of the largest in Germany. They have also in Saxony a forest school, a veterinary college, and 15 agricultural schools—we should call some of them colleges in this country—of varying grades. I have a list of these here, and if the Committee likes I could get particulars about any of the schools in Saxony. I know which are among the best, and I could get the course of study, programme and so on. Saxony is the richest agricultural country in the German Empire, but it is small as compared with its neighbour—Prussia. Prussia has got an area of

about 2½ times the size of England and Wales and, roughly, the population dependent upon agriculture is from three to four times as great. For this population they have in Prussia five University departments of agriculture, two colleges quite of University rank, two colleges for forestry, two veterinary colleges, and 16 high class—I do not mean high schools, I wish to indicate merely that they are of a high order—agricultural schools called *Landwirtschaftsschulen*. The work done at many of those schools is similar to the work done at some of our agricultural colleges. Then there are 22 lower-grade agricultural schools, 138 winter schools (*Ackerbauschulen* and *Landwirtschaftliche Winterschulen*) and 177 special schools dealing with such subjects as dairying, farriery, horticulture, and domestic economy. I have particulars of all of them in front of me and could get you further information, if required, of what is being done. Now, I will give you an indication of the cost of some of these institutions. Take first a University department like the department at Halle. That, so far as I can make out, costs the Prussian government about £6,000 a year. The number of students is about 300 in the winter term and 250 in the summer term. The other type of important institution in Prussia is the so-called high school or as we should call it, Royal Agricultural College. There are two of these, one at Berlin and the other at Bonn. The Berlin Institution is the finest of its kind in Europe, I think. I have not seen the Institute at Paris, but Berlin is certainly very perfectly equipped for the teaching of agriculture, and is one of, if not the best of its kind. I have got pictures of the Institution which will give you some idea of the type of building. (*Handing volume*.) This institution costs the State something like £27,000 a year, and it receives in fees and from other sources about £9,000 a year. So that the total income is somewhere about £35,000, or £36,000 a year. These illustrations will show you the kind of institutions which exist and the kind of work that is being done in Prussia. What strikes one very much on the Continent is the extent to which not only government but agricultural societies take up agricultural education and research. Agricultural societies not only subsidise experimental stations but they employ teachers, always well qualified teachers sometimes associated with central institutions, sometimes with small local institutions, and sometimes itinerant teachers who go about giving advice to members of the society. I may say that particulars about all these institutions and societies, the names of the men who are employed, and so on, are contained in this little German calendar, so that the information can readily be obtained. (*Handing book*.)*

15443. Is that an official document?—No; it is an ordinary book published in Berlin; I bought this copy when I was there recently.

15444. It is available to the public?—Yes. It is an agricultural pocket book. It is in two parts. The first part the German farmer carries in his pocket. It contains a diary for taking down his notes and it also contains a large number of tables, the same kind of tables as one finds in McConnell's Agricultural Notebook, and the second part he keeps at home as a reference book.

15445. (*By Lord Moreton*.) What does he buy it at?—3½ marks.

15446. For the two parts together?—Yes. Then another point that strikes me in the case of Germany is the very large number of qualified teachers that are available. If you turn up this book and look at the list of those who are engaged in teaching in any of the schools one finds that the director and professors are highly qualified. A professorship in Germany is sometimes a personal distinction and not only for those who are connected with the universities.

15447. (*By Lord Barnard*.) Do you mean that in Germany they do not do as they do in this country, very often assume the title of professor?—I cannot answer that question, but in Germany it is used as a personal title more often than here. In Saxony as in Prussia, you find doctors of philosophy engaged in teaching in the middle and higher class schools.

15448. Are these teachers practical men?—Not in the English sense of the term "practical," but teachers have got to go through a prolonged course and pass an examination, and in Prussia they require at least one year's practical agriculture before they are qualified. This slight sketch of the colleges and schools of these two kingdoms conveys a very inadequate idea of the total amount of agricultural work that is being done there. In addition they have a large number of experimental stations; there

Mr. T. H. Middleton.

17 July, 1907.

* Mentzel und von Lengerke's *Landwirtschaftlicher Hilfs und Schreib-Kalendar*, 1907.

are about 76 altogether in Germany at the present time; in Prussia there are about 46 of these institutions. Saxony has got five, so that a State of the size of Yorkshire has got five of them scattered over it, and some of the Saxon institutions are very noted. Mückern, for example, which is one of the oldest experimental stations in Germany, has done very fine work. Another point, and one which I have already alluded to: I asked when in Berlin which of these experimental stations was best worth visiting, and I was specially recommended to see one in Saxony (I was unfortunately unable to visit it); upon inquiry I learned it was supported not by Government but by a chamber of agriculture. So much for these two countries in North Germany. I will now give you a sketch of the work in America, which is rather different in character, because there have been different problems to face. First of all with regard to the United States.

15448b

Mr. T. H.
Middleton.

17 July, 1907.

15448c

I looked up last night the area, and I find it is about 60 times the size of England and Wales, and the population is roughly twice that of England and Wales. The population dependent on agriculture would appear to be about eight times as great as that of England and Wales. To serve this population they have got first of all a central department of agriculture at Washington, which is partly administrative like our own, but primarily—the word “primarily” is used by one of their own officials in describing it—it exists for the purposes of research. The funds available for this central department are over a million pounds per annum. The divisions of the United States Department of Agriculture are the Weather Bureau, the Department of Animal Industry, the Bureau of Plant Industry, Forest Service, Bureau of Soils, Bureau of Chemistry, Bureau of Statistics, Bureau of Entomology and the Bureau of Biological Survey, the Office of Public Roads, and the Office of Experiment Stations. The Office of Experiment Stations is the department with which we are directly interested, it has charge of educational work and publications. Before I pass to the separate States I may say that this Office of Experiment Stations publishes the most valuable work in the English language on agriculture. This publication (*The Experiment Station Record*) consists of an abstract of all the work on agriculture which has been done in every part of the world. It is published every month. If you want to find out what is being done in any part of the world in agricultural science you turn to the index and you will find a reference. The references are usually a few lines just to show where to find the original article; but when anything important happens they give an article on the subject, so that to keep in touch with agricultural work generally this is the best publication. (*Handing volume.*) My own interest in the *Record* began in India. I used it from the beginning, and I found it was particularly valuable to me in India, because it brought me into contact with the work in the Southern States of America, which, of course, was similar to the work that we had in cotton and tobacco-growing in India. Next with regard to the individual States: each of the American States, with one or two unimportant exceptions, which I need not mention, possesses, at least, two institutions for the promotion of agriculture or agricultural education, one is the Land Grant College and the other is the Experimental Station. First as regards the Land Grant Colleges. These were founded in this way. About the middle of last century there was a movement to secure agricultural education in America—Major Craigie referred to it in his evidence. In 1862 an Act called the Morrill Act was passed, which granted 13,000,000 acres of land to the different States for the purpose of endowing Land Grant Colleges. The grant was made in proportion to the population, 30,000 acres for each senator and member of Congress returned by the different States; and therefore, the older States got the best of it, having at that time the larger population. The States appear to have been given a perfectly free hand in dealing with this land, and some of them having sold the land have made particularly good use of the funds. Others have not done so well, and there is a very great difference now in the income which the colleges derive from the grants of land originally made in 1862. One stipulation was that no part of that money was to be used for building. In 1890 there was a second Act passed, which secured to each Land Grant College a sum of 15,000 dollars at that time, rising to 25,000 dollars, which is now the amount paid to each. The value of the foundation of the 63 Land Grant Colleges of the United States is at present between £200,000 and £300,000. That is the average capital value of the institutions, the buildings, and all they possess. The average annual income of the Land Grant Colleges is about £30,000, so far as I can ascertain. These Land Grant Colleges are not at all meant to be exclusively agricultural.

The leading object of the Land Grant College was to teach such branches of learning as are related to agriculture, and the mechanical arts; engineering, &c., therefore come in. The idea was to make them useful as professional colleges for the people of the United States, and also, I may say, the grant having been made during the Civil War, a point was made of military instruction, and I think all of them give military instruction. The great majority of the students in the Land Grant Colleges do not, as a matter of fact, study agriculture. We can ascertain to what extent the Land Grant Colleges are used by the agricultural population in this way. In 1904 there were 2,700 teachers in these colleges, and 56,000 students. Of the students, 5,000 only were taking a four-years' course in agriculture, while about 6,000 were taking shorter courses. The short courses in the United States are a good deal longer than our short courses. They are about 26 weeks at Cornell, but they vary at different places. I can give particulars about the short courses if necessary. With regard to the objects of the agricultural college I should like to just quote a sentence, which I made a note of in this connection: “At present there is little demand for the all-round expert in America. Few colleges attempt to educate them.” (That is the agricultural expert.) “Such an expert cannot be educated in four years, if at all. When the demand arises for this type, training will have to begin in the preparatory school, and continue till the end of the university course; but the demand is far off. At present the colleges content themselves with giving the students a fair general knowledge of the sciences underlying agriculture, horticulture, and the animal industry, with opportunities to acquire experience in some one line of practical work.” That is to say, the American colleges from the beginning have recognised the fact that the whole subject agriculture is too wide a subject for one man. The students have to specialise from the beginning in animal industry, or plant husbandry, or some other department of agriculture or horticulture, and such a type as the County Council “instructor” does not exist in the United States. I do not mean the actual agricultural expert of the County Council, but the agricultural expert the County Council expect to get when they advertise for a man to act as an instructor. In addition to these Land Grant Colleges, which are used by the agricultural student, we have the Experiment Stations, which are meant for the acquiring of agricultural information; and, looking at the question as an outsider, it seems to me that the university and college education of the United States have only become successful since these experiment stations began their work, and since the results of the work permeated the colleges. I notice a very great difference in the quality of the work which one comes across now as compared with what one saw, for example, in 1888 and 1889.

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I will now give you a brief outline of the work of the experiment stations.

15449. When were the experiment stations established? —At different times. The first station began in 1858, but it had to be abandoned during the Civil War. In 1871 there was another station established, and between that time and 1887 there were founded in the United States 17 different stations, but they were all crippled for lack of funds, and they were not able to do very much. It was not until the passing of what is called the Hatch Act that these experiment stations really began vigorous and useful work. The Hatch Act was passed in the year 1887, and that Act provided that each State should have 15,000 dollars from the Federal Government for the purposes of the station. The Adams Act of 1906 will ultimately provide a further sum of 15,000 dollars for each. The State Governments supplement the central contribution, and at the present time the average income of the American experiment stations is between £6,000 and £7,000, more than half of which comes from the Federal Government at Washington. These experiment stations differ greatly in size and wealth; some of them are very wealthy. Some States give large contributions, and in other cases the individual State gives a comparatively small amount. When the Hatch Act was passed each experiment station was laid under an obligation to provide a bulletin once every three months. That is the only part of the law as to the wisdom of which I have some doubt. The result certainly was the publication in the early years of a great deal of material which should not have been published. It may have had a good result, and probably had a good result in stimulating workers and making them reduce their work to writing; but it was unfortunate for the good name of the experiment stations themselves that they were bound down to this regular publication of reports. There exists in the United States a powerful association

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15449b

of teachers, and others associated with American colleges, schools and experiment stations. This association has been largely instrumental in improving the character of the courses of agriculture at the different colleges, and, through their annual meetings, in improving the quality of the work which is done at the experimental stations. The reports of the meetings of this association are most

15449c interesting. I can hand round reports showing you the kind of work that is done at the experiment stations, and if you will glance through these publications the photographs will give you a fair illustration of the type of buildings which they employ. There is a table at the end of one pamphlet which shows the incomes and the line of work of each station. Then as a specimen of the kind of bulletin which is published for farmers, I picked out last night at random one on the principles of horse breeding which I will hand to Mr. Latham. It is a Wisconsin bulletin. (Handing document.) The United States Government are always having special reports prepared, and the Office of Experiment Stations issues, in addition to the *Experiment Station Record*, a very large number of special reports. Here is one for example which deals with agricultural instruction for adults in the British Empire. That is rather interesting to us. It consists of 96 pages, and it does not get down to Great Britain until the 65th page. They find more to record in the Colonies than they find in Great Britain apparently. I have not read this report through, however. (Handing document.) Then here is a report which would be of interest to some members of the Committee, showing the kind of instruction in agriculture which is given at the American colleges, and also one containing reports on short courses. (Handing documents.)

15449d I should like to add to the information which I have given about the work in Germany, one point that I omitted to note. Nearly all agricultural institutions in Germany are connected with the different kingdoms or states. But there is one institution at least for the whole German Empire which is of the greatest importance to agriculturists and that is a new institute established in Berlin for the purpose of investigating the diseases of agricultural and forest crops. This institute is at Dahlem; it is very well equipped; it has got a large staff, and the whole object is to work for the agriculturists of the Empire. We might compare the work done there for agriculture with the work the physician does for the human species. They issue leaflets as our Board does. I have specimens of their reports and also of their leaflets here. I visited that institution, and I could give more information to any member of the Committee who would like to hear about it. There was another point that interested me at the University of Leipsic. I have their time table here, and I find the students begin their work at seven in the morning; this is a point that is rather significant. They seem to work very long hours at these institutions.

15449g 15450. At what ages do these students go?—They are very variable in age just as in this country, but I should say 19, 20 and 21 is the ordinary age of entrance and in Germany they like all agricultural students to know something about farming before they come to the institutions, so far as I could gather in conversation with the heads of the departments this preference is widespread. Recently I have also seen institutions in Austria and in Hungary, but I do not think I need refer to them now. I have not had an opportunity of going into their work fully.

Now with your permission I should like to say something about the work we have been doing at Cambridge.

15451. Before you deal with that can you give the Committee any information about India?—In a general way I know what is being done in India. India has got a central institution for research at Pusa. Government aims at having at least one agricultural college in each province, and also one agriculturist, who shall act as a deputy director of agriculture and look after agricultural matters, an agricultural botanist, a chemist and a mycologist. They want these men in each province; and they are appointing them as fast as they can get them.

15452. Is the subject progressive in India?—They have made very great progress in the last 10 years. There was nothing of the kind in a University college when I went out. There was an agricultural college at Saidapet, near Madras, but it was not connected with the University there.

15453. We may assume that the British Government, then, are satisfied as to the necessity of the work?—Yes, very decidedly so.

15454. I suppose we need hardly ask, these institutions are more or less Government institutions?—Yes. At Pusa, the Imperial Institution, and the provincial institutions in Bombay, Madras and the United Provinces are all Government institutions.

15455. And paid for by the Government?—Yes. There has recently been founded an important institution for research endowed by a Parsee, Mr. J. N. Tata; I think it is located in Bombay. It is the only research institution that I can call to mind in India which is not Government. There are educational institutions which are not supported by Government and a certain amount of scientific work is being done in some of these institutions, botanical and chemical, but not agricultural.

15456. (By Mr. Medd.) Are you familiar with the reports which have been issued by M. Orange?—No. I know of them, but I have not read them.

15457. You would see from them that agricultural teaching has become universal in all the elementary schools. They have not got so far as that in France, but it is stated in the syllabus that agricultural teaching shall be given?—Shall be given; I cannot say that it is being given yet; I think not.

15458. This Report was only issued 18 months ago?—Quite so. I know they aim at that, but it will take some time before it is accomplished.

Lord Reay asked me to say something about the Cambridge course of study after Professor Wood gave evidence. I was supposed to follow on at the time and to have supplemented his evidence, but there has not been an opportunity for me to do so until now. I will continue where Mr. Wood broke off. I shall give a considerable number of facts in connection with the Cambridge course because I think it is useful for us to have the facts in evidence to show what has been done there. We have at Cambridge a technical course of study preparing for the University diploma in Agriculture. The normal length of this course is two years, but the diploma can only be taken in this time by a student who has had some preliminary scientific training. As a matter of fact, students usually spend three to four years at the University before going up for the diploma, and we always try to make them take a degree first. This year, for example, 18 students appeared for the agricultural diploma.

Of these, nine held a Cambridge honours degree (three, I think, first-class), five held the Cambridge pass degree, one was a graduate and scholar of Bombay University. One intends to graduate, he has not yet done so, but I have no doubt he will take an honours degree, and one of these candidates was not a Cambridge student. We had 18 candidates, but only one from another institution. I may say that represents the ordinary course of events. We have very few students coming from other institutions; although the diploma is open, the number of candidates is small. Of the 18 students, 14 passed and 4 failed. Then, with regard to the time which they had spent in study, 13 of the Cambridge students had been four years or more at the University, two had been three years, two had been two years only, but one of these was the Bombay scholar, who was a distinguished student of Bombay University. I may say in passing that we have a large connection with India; we always have several Government scholars, and one of the men who took the diploma this time was an Indian civilian, a Cambridge graduate, who has been in the Indian Civil Service for eight years, and was home on furlough. Next, with regard to the total number of students. We had 51 students on the books last year. Of these, 23 were studying for professional purposes, that is to say, in connection with either teaching, or other agricultural posts. 17 of these were graduates, two had already qualified for graduation, had not kept the terms, but had qualified; three others were preparing to graduate. 19 others were interested in agriculture as landowners or prospective farmers. One of these is a landowner who has taken an honours degree and is now doing some research work. I know of one who will become a land agent. I could give you the details about all of them, they are all connected with land. With the remaining nine I am not, personally, acquainted, and I cannot tell you what they are going to do, but one of them at least was a Japanese student of Economics. I may say that certain of the students of Economics are recommended to attend the lectures in agriculture, and there are always one or two who come. Of the 51 students two only were county students. Both these come from the county of Essex with scholarships and were ordinary members of the University. I may add that there was a third county student who had passed through our course and is qualifying to graduate now, and there may have been some others of whom I have not heard, but the total number of county students coming up is always small. We do not recommend any county to send up a student who is not well qualified to take advantage of the course or who is not up to what we call honours standard. The chief thing that one notices about the Cambridge course, looking back

Mr. T. H. Middleton.

17 July, 1907.

15452a

15452b

15458c

Mr. T. H.
Middleton.
—
17 July, 1907.

15458d upon it, is that we have had a very great change in the quality of the students since the University Department was founded. At first there was a disposition not to take agriculture seriously. Professor Somerville, speaking about Oxford, said that they did not desire an honours degree in agriculture; they want all men who take to agriculture as a serious study to obtain an honours degree first. That is precisely the position in Cambridge. They must at least take honours, if they intend going in for the teaching of the subject. We have a farm at Cambridge of about 140 acres, which we find of the very greatest use to us for the following purposes: First, we employ it to demonstrate to students. Some of them, I am sorry to say, get their first lessons in agriculture there. We do not like that, but sometimes we have got to use the farm for this purpose, but we do not profess to give full instruction in practical agriculture on the farm. We advise students to go to a practical farmer during the vacations, and before they come to us, or after they leave us, if they have not had sufficient practice beforehand. During the 24 weeks of term there is no time to give much practical instruction in agriculture. What we do is this: we use our own farm for demonstration purposes to let students see what is being done at each season of the year, so as to let them get familiar with the crops and the ordinary routine. Supposing I were beginning a class in the winter, after having taken students two or three times to our own farm until they have got a general idea of the character of the farm and the subjects that we are going to study, I take them to see other farms in the neighbourhood and we go round to see the things that we are speaking of in the class. If, for example, we are dealing with the subject of soils, then they go round and see all the soils in the neighbourhood; and if it is crops or live stock, then they see the crops and the live stock, both on our farm and elsewhere. That is all the practical work we can do during our 24 weeks of term in a University course. We try to get these excursions once or twice a week, but it very much depends on the weather as much of the work is done on bicycles. Then we use the farm for demonstrating to farmers, and these demonstrations we find most useful. It is by means of them that we have got into close contact with the farmers in the Eastern Counties. They come there in large numbers now. Last year we had about 600, and we could easily have had more if we could have taken them. When farmers come they see what is being done, and as our system is that each person is responsible for some particular work, each one is a specialist in some particular business. The farmer finds that there is someone on the farm who knows about some one part of agriculture more than he does himself, and many farmers come there to learn. They are particularly interested in wheat breeding and also in potato experiments. Wheat and potatoes are important crops in our own Cambridge neighbourhood. It is very easy to demonstrate things with these two crops which will give farmers an interest in the work that we are doing.

15459a 15459. (By Mr. Staveley-Hill.) Do you mean you would have had more than 600 if you had had room?—Yes, if we could have arranged to take them, but there is a difficulty in fitting in the days. Farmers come at a time when the crops are nearly ripe, before harvest, and there is a difficulty in getting the days to suit large parties. Last year, I remember, I had 113 to deal with on one day, and as we cannot take more than 40 round at a time, we began at 10 in the morning taking parties in relays, and went on until 7 at night. The parties have got to be organised; we have to make arrangements, and we do not invite more than we can fit in. We make a point, in connection with our experiments, of continuing the same work year after year so that we can give definite information on any particular point that is asked in connection with the crops that farmers see there. If they ask about a particular potato we can tell them all about that particular kind of potato so far as Cambridge neighbourhood is concerned, and if they ask about a particular kind of oat we can tell them all about that. We can tell them all about it because we have had its history for some years, and the same is the case with regard to mangolds. That is what farmers like; they want definite information upon points they are interested in. The chief purpose of the farm is to enable us to carry on research work; we could not get on without a place of this sort on which to carry on breeding experiments, and also the tests I have just alluded to which give us information. And I may add that a farm is an absolute necessity to any institution which is teaching agriculture, because if the institution has not got a farm, the teacher of agriculture gets stale; he gets out of practice, and the teacher of agriculture must be in close touch with farming. It is one of the chief arguments for the

association of a farm with an agricultural institution that you must keep the teachers practical. Then a word about the cost of an institution of this sort. We were allowed £200 from the Board of Agriculture for the expenses of this farm, and our own Board in Cambridge allowed £100 a year. We were allowed to spend £300; as a matter of fact, we have spent on an average £275, that is to say, we lived well within our income. We did not attempt to make a profit; if there is any money in hand we use it for what we think will be an interesting demonstration, or for improving the stock, or something of that sort. Then with regard to the individual crops, we keep records of cost, and these crops pay us very well. I have these records here, the cultivation sheets showing what they cost, and what returns we have got. In addition to the experimental work at the farm, we have experimental work going on in the counties with which we are associated. I need not describe it, because you have heard so much of that type of work, but I may say that the area which we use in the counties is roughly the same as the area of the farm, about 150 acres. About 50 to 60 acres we hire for the purpose of experiments. Most of it we get lent to us, or sometimes the County Councils hire it for experiments. There is no difficulty at all in the Eastern Counties in getting suitable land for temporary experiments. There is a difficulty, however, in getting land for permanent experiments, where, of course, one would cause a great deal of trouble to the land owner or the farmer. The chief object in these experiments is to obtain information and materials for research for the benefit of agriculturists of the district. We use local plots as feeders for the farm and they keep us in touch right round. I would like also to emphasize the advantages of the association of the Department with the University. Mr. Wood referred to the fact that we had a large supply of students to draw upon. That is obvious, but from my point of view, having gone there from the outside as a teacher, having lived there and now looking back upon my experience, I feel that the University was of great value to me, because I was in a position in which I could get advice on any subject on which I required advice. We could indeed always get advice and assistance for the asking. If there was any chemical point of special difficulty, for example, that Professor Wood could not deal with himself, he could go to a chemist who has made a speciality of that particular point and get information and help. Mr. Biffen in the same way would go to some man who had made a special study of a particular subject if he wanted further information with regard to a problem. This interchange of information is going on continually, and it is this, I think, that has enabled us to get done in a comparatively short time a relatively large volume of research work. The opportunity of going whenever you are in difficulty with any problem to someone who is likely to know more about it than anyone else in the country, and getting his advice, is of the very greatest value. Then I should like to say, while I am talking about the advice and assistance which we have got from others at Cambridge, that we are also, as a department, very much indebted to the University Authorities, who have greatly assisted us in general administration and in the arrangement of our work. We have no buildings; that is our chief difficulty at present. We have been borrowing buildings from professors or from colleges for the last five or six years, and the professor who has been most generous to us in the past, Professor Liveing, now requires all the room that we occupy, in fact he has had to arrange for an addition to his laboratory. He is retiring, and I have no doubt we shall be turned out of our room within the next year or two. In view of this, knowing what was in front of us, we set about collecting funds for a building and I am glad to say that the Chancellor, the Duke of Devonshire, has taken the greatest interest in the subject; he practically has himself taken charge of this fund, and we now have between £12,000 and £13,000 in hand for the erection of a School of Agriculture.

15460. (By Lord Barnard.) Is that in connection with the general funds for extending the University of Cambridge?—It is part of the same fund. There is an Association called the University Association of which the Duke is President as Chancellor, and that Association has a number of branches, each branch being engaged in raising funds for a particular object. Our branch raises funds for agriculture. We are now in a position in which we are ready to build; we have obtained a site from the University, and within the next two or three years I expect to see a good School of Agriculture erected in the University, which, of course, will make a permanent centre for research and educational work.

I would also like to refer to a subject not connected with the University, but which is connected with agricultural

15460b education. Some of us felt that teachers of agriculture suffered because there was no one journal which was devoted exclusively to the publication of the results of original work in agriculture. The papers which were written were sent to journals dealing with chemistry or botany and were apt not to reach agriculturists; we therefore established a journal. We approached the Syndics of the University Press and asked them to take the journal up, and they kindly agreed to do so. There was a private arrangement by which we guaranteed a sum of money against loss. The first volume of the *Journal* is completed; the second volume is in process of publication. I should like to hand the first volume round so that you may see the steps that we have taken in this respect in the interests of agricultural education. (*Handing volume.*) The requirement for everything published in the *Journal* is that it must be original, and it must, of course, show good work.

15460c One other subject I wish to bring before you is the Agricultural Educational Association, which has been mentioned once or twice. I was at one time the chairman of a sub-committee of that Association, but I am now an ordinary member, and I can perhaps speak more freely on the subject than Mr. Brooke-Hunt, who is chairman. That Association exists for the same purpose as the American Association, namely, for enabling teachers to interchange ideas, so that each may know what the other is doing. I may say that the Association has been of great value to me personally, and I have no doubt to a good many other teachers. It is of great importance for teachers to be able to meet once or twice a year, to learn the experience of others, and to discuss the directions in which the work may be furthered. The particular lines in which good work has been done are precisely the lines along which we have had an indication that good work is required: this Association has done a good deal in co-ordinating the work of the colleges. We all of us felt that the local experiments required co-ordinating, and we prepared, and had published by the Board of Agriculture, a set of schemes which were meant to be example schemes for the different members of the Association. That has done a great deal to improve agricultural experiments in the country. The same might be said about our teaching. I think we have all got hints for our teaching from that Association. Professor Campbell alluded to the Association and mentioned the great trouble in connection with it, viz., the difficulty of getting men who are widely scattered to meet so often as twice a year for purposes of conference and discussion. I think it is worth the consideration of the Committee as to whether some means could not be devised in order that we might make more use of an Association of this type, as a means for getting still greater co-ordination and co-operation in agricultural work. That certainly is the way in which similar work has developed in the United States of America.

15460d 15461. You have given your information so clearly that I hardly think I have any questions to ask you. There is just one point with regard to Cambridge. How far, if at all, do you influence secondary schools or advise them?—We do not do so except by meeting privately those who are interested in secondary schools. We have no direct connection with the secondary schools, not as a department, that is to say. The University influences secondary schools very largely through the local examinations. Members of our department share in examining.

—15462. The great object of the department at Cambridge, I gather, is to add to the general stock of scientific knowledge on agricultural matters?—Yes, and to provide teachers; but these teachers, at present, are going to India and to other countries.

15463. I do not know whether you care to answer the question or not, but I should like to ask you whether in the terms of reference to this Committee, you consider that the Cambridge arrangements for agricultural education are sufficient and satisfactory?—I would prefer not to express an opinion just now; I would rather do that as a member of the Committee.

15464. (*By Lord Moreton.*) You mentioned the veterinary colleges in Germany, they are integral parts of the University, are they not?—I do not know of any veterinary college which is a part of a University. I am not sure about the one at Dresden, but the one at Berlin is a separate institution, just like the agricultural college.

15465. Are those veterinary colleges maintained with the object of teaching veterinary science or are they maintained with the object of producing or training veterinary surgeons for the Army?—For both purposes.

15466. Can you tell me what sort of grants the government give those veterinary colleges?—With regard to

the High School at Berlin the State supplement in 1905 was 243,000 marks, about £12,000.

15467. The cost of that institution alone to the State is £12,000?—Yes. The grant from the State was 243,000 marks.

15468. How are the results of the American research work made known to the farmers? Are there any cheap publications in America like our Board of Agriculture leaflets?—Yes; there is an admirable series of Farmers' Bulletins, which are fuller than our leaflets are. They are small pamphlets of usually from 10 to 20 pages.

15469. Published at a very moderate cost and very largely circulated?—Yes; I think they are circulated very largely.

15470. (*By Mr. Medd.*) Perhaps I might be allowed to mention here that in 1904, 12,421,386 copies of those were distributed?—They are very largely distributed.

15471. (*By Mr. Latham.*) Is the book on horse-breeding that you handed to me a private book or an official publication?—That is published by Wisconsin Experiment Station as a bulletin, and is sent to every farmer in Wisconsin, I suppose.

15472. I strongly recommend that something of the kind should come from our Government. If it is a book that is officially sent out, it is really a very valuable book?—Yes.

15473. (*By Mr. Davies.*) In the United States, does the Government try to get at the farmer directly or does it get at him through the colleges and the local agricultural institutions round the country?—Chiefly through the colleges and local institutions, I believe. Farmers' Institutes now are doing a great deal in getting at the farmer.

15474. How about the distribution of literature?—Each State distributes to its own farmers. I am not sure to what extent the Central Government at Washington sends publications to the farmers. I think it would very much depend upon the character of the farmer. I should think important farmers would be likely to get all the publications, but I have no knowledge of that. Those who live in the State get the State publications direct from the State.

15475. That is the method which the Board of Agriculture here have also adopted?—Yes. We send our leaflets out free, but our *Journal* is only sent to those who subscribe; it costs 4s. a year.

15476. You do not think it would be a better system if the Board tried to reach the agriculturists of the country through the already existing local agricultural institutions?—We do so in this country so far as possible; we try to reach them by every means in our power.

15477. I am thinking of the leaflets, the distribution of literature which goes direct?—I am afraid at present the colleges have no means of distributing leaflets cheaply. The Board can frank them and, so far as the leaflets are concerned, it would be more convenient that they should be sent out from the central Department, because England and Wales correspond to one State of the United States so far as size goes.

15478. (*By Mr. Medd.*) You mentioned Scotland at the beginning of your evidence. Do you happen to have been educated at one of the Dick schools?—No, I was at a school called Merchiston; I have no personal knowledge of the Dick schools.

15479. The Dick Schools are in Aberdeenshire and Banffshire?—Yes.

15480. I wished an opinion from you as to the value of such schools generally, and as to their adaptability to England. In regard to Germany, did you not find that the German Government clearly differentiates between each type of agricultural student, that a school is of a defined grade?—That is true.

15481. So that a man inquiring for a particular grade of institution, such as Berlin or Leipsic or Dresden, would be referred to a definite place?—Of course I cannot say whether that is the practice, because I have no personal knowledge of what the German Government would do, but from what I know of Germany, I should suppose that that is likely to be the case.

15482. You are not here representing the Board of Agriculture at all?—No, I am giving evidence in a personal capacity.

15483. Do you think in England it would be an advantage to have a clear classification of the different grades

Mr. T. H. Middleton.

17 July, 1907.

Mr T. H. Middleton. of institution as to the type of instruction they offer ?—I see no objection at all to a classification.

17 July, 1907. 15484. Classification eliminates confusion to some extent, does it not ?—Yes.

15485. The more you eliminate confusion in the choice of a school the better ?—Yes ; but, of course, before one makes up one's mind to any system of classification, one has got to have the particular institutions to be classified in one's view.

15486. Of course you are more familiar than I can possibly be with the institutions in existence, but I, as one of the public, am perfectly aware that there is the greatest confusion existing as to the grade and quality of the instruction offered by these different institutions and I ask you, merely as one of the public, whether you do not think it would be to the advantage of the public to have a clear distinction and definition and classification of institutions ?—We try to make known, as far as we can, what the character is of the education that is offered at each institution.

15487. Are you speaking now of the Board of Agriculture ?—Yes.

15488. I ask you as a private member of the public. In Germany, you say, they do classify them ?—I meant in this : you classify the University departments and the technical high schools in one group, and then you have a group of agricultural schools, then a group of lower agricultural schools and finally a group of special schools.

15489. Exactly ; so that you do know in choosing your type of school " I am going to a school of an intermediate type where I shall become an actual cultivator of the soil," or " I am going to a school of the higher type where I shall become probably an agricultural man of research or a teacher," and so forth ?—I might point out that among the schools in any particular group there must of course be a great number of grades. Some of these agricultural schools are of a very high character and others are of a lower grade. That depends on the staff of teachers who happen to be there at the time, and I do not think one could decide what was the best institution for a particular pupil until one knew the teachers who were there and especially who the head of the institution was.

15490. That is quite true, but in England you would put roughly Harper-Adams on the same footing as Leeds ?—I do not think so.

15491. However, the point is not worth pursuing. Have you visited Holland at all ?—No, I have only passed through Holland.

15492. You have no knowledge of its agricultural system ?—No.

15493. Nor of France ?—No, not except from reading.

15494. Have you visited these American colleges to which you refer ?—No, I am sorry to say I have never been in America.

15495. Of course, then, you are not capable of expressing any opinion as to the type of institution there that you prefer. You referred to the Morrell and Hatch Acts of which everyone knows, and the Land Grant Colleges, but you did not refer to the grades and different types of the colleges ?—I have not personally been able to make a selection, but from the work turned out I know quite well which institutions do good work.

15496. Do you know the type of the college in Iowa ?—I know it, but I do not want to go into the merits of special institutions.

15497. You know they totally differ in character ?—They do.

15498. In regard to the farmers' institutes, have you ever had any practical evidence of their benefit ?—Only from what I have heard from men whom I have met.

15499. Probably agricultural teachers, and so on ?—Yes, and from what I have read I may say that Dr. True has a very high opinion of these institutes.

15500. Dr. A. C. True at Washington ?—Yes.

15501. I know him well.—He has a very high opinion of these farmers' institutes.

15502. He thinks they do good. With regard to the boys' agricultural clubs, have you had any information of them brought to you ?—No. I think there is one in connection with Cornell.

15503. No, they are all over. They began in Illinois ?—I have heard about them incidentally, but I have not followed their development.

15504. Now, with reference to the Hatch Act, what is your impression of its working, taking the States as a whole ?—Taking the States as a whole my impression is that the work of these experimental stations has done a very great deal for the agricultural industry.

15505. Are you aware that the manner in which the advantages offered by the Hatch Acts is taken up in different States varies very considerably ?—Yes, I know that.

15506. I think I had the pleasure of meeting you at Cambridge when I went to visit the Cambridge County School ?—Yes.

15507. Do you think that that school is, from an agricultural point of view, a success ?—I have not closely examined the working of that school.

15508. I think you may remember that on that occasion you most kindly accompanied me to the school, and we found about six pupils on the agricultural side, did we not ?—I might point out that the object is to give a modern training, or a general science training, to the sons of Cambridge farmers, among others.

15509. I think the idea is excellent, but is it a success ? That is the point one wants to ascertain ?—It depends on the point of view. If you mean does it have many students studying agriculture, then I should think, from that point of view, it is not a success.

15510. I think you will agree with me probably in this, that the attempt to combine anything in the nature of technical agricultural instruction with secondary education is a mistake ?—Yes, in general I may say that I do not approve of the attempt to combine what you call technical agriculture or practical agriculture with secondary teaching.

15511. I am distinguishing, of course, technical instruction from educational ?—With respect to this particular school I have never examined it as an examiner, and I am not sufficiently familiar with the work of the boys to pass an opinion as to the educational value of the course. I believe it to be good.

15512. Am I not right in believing that the farmers of Cambridgeshire generally, were consulted by circular as to the type of school they would like to have established ?—I believe they were.

15513. That, you will agree with me, is an excellent thing for a county council to adopt ?—Yes.

15514. (*By Lord Barnard.*) One more word about America. Should I be right in thinking that the agricultural industry in America differs very widely from that in this country in consequence of the fact that in this country it is a well established and organised industry to a certain extent carried on by men with hereditary knowledge and instincts, whereas in America it has very largely to be created ?—That is so, my lord. The agriculturists of America had much more to learn 50 years ago than the agriculturists of Great Britain had. In connection with the present attitude of the American farmer to education I might read one sentence which I noted as being the opinion of Dr. A. C. True, who is in close touch with American experimental work and also with farmers. He refers to the effects of the system of instruction which is now adopted throughout the United States, and he says : " Under these influences, farming in the United States of America is becoming a profession enlisting as high talent, and held in as high esteem as the learned professions." It appears to me that the American farmer may have made up much of the leeway that existed 50 years ago.

Mr. A. E. BROOKE-HUNT, called and examined.

15515. (*By Lord Barnard.*) You at present hold the office of a Superintending Inspector of the Board of Agriculture and Fisheries?—I do, my lord.

15516. You have held that appointment since the year 1888?—I was first appointed as an inspector in 1888.

15517. I think the Committee would like you, if you would be kind enough to do so, to do as Professor Middleton did and tell us what your qualifications were?—I was brought up in the country, and exceedingly fond of country life, and, after taking my degree at Cambridge, I attended at the Royal Agricultural College at Cirencester, intending then to take up land agency. I obtained my diploma there at the end of the course, and also the diploma of the Royal Agricultural Society of England, and that of the Highland and Agricultural Society of Scotland.

15518. Am I right in thinking that in the Royal Agricultural Society's examination you took first place in your year?—Yes, I did, as a matter of fact.

15519. The work carried on by the Board of Agriculture is based upon Sub-section 2 of Section 2 of the Act of 1889, which created the Board?—That is so.

15520. That section I see compels the Board to undertake the collection and preparation of statistics, and it empowers the Board to undertake the inspection of, and reporting on, schools, and of aiding schools, and aiding systems of lectures, or instruction, and the inspecting of, and reporting on examinations; that is to say, four distinct topics?—Yes; that, of course, is with regard to schools which are not public elementary schools.

15521. Yes. The Board, through you, do inspect and report upon schools, and they also, acting on information given, to a large extent by you, aid schools?—Yes, using the word "schools" as embracing institutions of every character, even universities.

15522. The Board do not aid systems of lectures, or instruction, do they?—At the present time, not.

15523. Have they ever done so?—They used to do so in the past when the work first began.

15524. Perhaps you will explain later why that was discontinued?—Yes.

15525. Do the Board inspect and report upon examinations?—The necessity does not often arise, but, if it were to, the Board would be quite willing to carry out the work, and in any case they keep themselves entirely in touch with examinations. A short time ago, however, they sent an inspector down to inspect and report on the last examination for the National Diploma in Dairying, and he was practically present during the whole of those examinations.

15526. Lord Moreton reminds me that your Board are represented on the Examination Board for the National Diploma in Agriculture?—They are.

15527. You were good enough to place in my hands some little time ago a very interesting Memorandum, "A survey of the growth of Agricultural Education in Great Britain by means of State assistance," but as Major Craigie has practically covered the ground I do not propose to ask you to go over the whole of it again unless there is anything you wish to draw attention to specially?—I should like to mention the question of grants given by the Board to which you referred just now. Grants in aid of agricultural education date from the time of the Agricultural Department of the Privy Council before the Board of Agriculture was, in fact, formed, and were the direct result of the recommendations of what is known as the Paget Committee which was appointed in 1887. In the year 1888, when it came to a question of seeing what institutions were capable and fit to receive grants, it was found, as a matter of fact, that there were very few permanent institutions, and those only carrying on the work of dairying, which were, with the exception of the University College of Bangor in North Wales, capable of receiving grants. There was, however, a good deal of work both in the direction of dairy lectures, dairy classes, and agricultural lectures, together with field experiments, being carried on by local and national agricultural societies, like the Bath and West of England Society, and other bodies, and it was the practice of the Board in those days to make grants in respect of work of that character. You will see from the Reports, here, on the distribution of grants, which I have from the year 1888 up to the present time, that there were certain classes of instruction carried on at first which were directly aided by the Board, but when the Customs and Excise Act, 1890, was passed, it was

thought that such work, when carried on by purely local means, was work which came more under the duties of the County Councils than directly under the Board of Agriculture. As a consequence, the Board itself began to concentrate its grants more upon permanent centres, or institutions, through which the work was carried out in a group of counties.

15528. In 1887 the Paget Committee made certain recommendations which are before us. We have their Reports, and I need not take you through them. The result of that Committee's recommendations was that the Government Department then charged with the supervision of all matters relating to agriculture, that is to say, the Agricultural Department of the Privy Council, undertook to get from the Treasury, or did get from the Treasury, a sum of £5,000 to expend in grants?—That is so.

15529. Then in 1888 two inspectors were appointed for England, and one for Scotland?—Yes; three inspectors altogether.

15530. We may dismiss Scotland at once from our consideration, I suppose, because all the work in Scotland is conducted through the Scotch Education Department?—It is now, but at first it was carried out by the Privy Council and then afterwards by the Board of Agriculture.

15531. Do I understand there are two inspectors now, yourself and an assistant?—Yes, I have an assistant.

15532. In 1889 the work of the Agricultural Department of the Privy Council was transferred to the Board of Agriculture under the Act of 1889?—That is so.

15533. About that time, I presume, there was a stage of transition and reorganisation?—No, because the policy was perfectly continuous, and the work followed the lines previously adopted by the Privy Council.

15534. I suppose that the complete organisation of the Board was naturally gradual?—Yes, but from the very first, after the Board was appointed, Education received a very large share of their attention, and a director of three Divisions of the Board, the Statistical, Educational and Intelligence Divisions, was appointed, through whom the whole of the educational work, of course, passed. That appointment of director was subsequently merged in that of assistant secretary, as it is existing at the present time. The duties of the Educational Section of the Board are officially described as follows:—"Business and correspondence connected with the administration and allocation of the Parliamentary Grant for agricultural education in England and Wales. Preparation of an annual report to Parliament on the distribution of grants for agricultural education, and on the work carried out by institutions aided by the Board. Inspection of and reporting on educational institutions or other bodies (other than elementary schools) who seek the financial assistance of the Board in respect of the technical instruction in agriculture or forestry. Compiling and publishing summaries of reports on agricultural experiments conducted by bodies who are aided by grants. Conferring with County Councils and local bodies respecting their schemes of agricultural education, advising them thereon, inspecting the work when in operation, and reporting thereon."

15535. That is practically very much what Mr. Macdonald, from Scotland, described in two words as "stimulating and directing" education?—That is the case.

15536. May we take it that to a very large extent the institutions which exist at the present day owe their existence to such stimulation and direction of the Board?—I hope, generally speaking, that this is the case. They owe their initiation to local desire and local effort, but the Board have endeavoured to assist that local effort and to stimulate it as far as possible.

15537. Will you tell us how your clerical work is done?—That is all done in the Intelligence Branch, the head of which you had before you yesterday.

15538. It must be very considerable?—It is fairly considerable. Of course the whole of the strictly official correspondence is carried on in the usual way through the assistant secretary; but there is, in addition, a considerable amount of general or semi-official correspondence which has to be carried on, and this is done by myself personally.

15539. Do you write official letters yourself or do you sign them?—The strictly official letters are signed by the secretary or an assistant secretary.

15540. Are you under the secretary of the Board or

Mr. A. E.
Brooke-Hunt.

17 July, 1907.

Mr. A. E. Brooke Hunt. under the assistant secretary?—My work comes first of all under the assistant secretary.

17 July, 1907. 15541. Can you say at all how much of your time, relatively, is occupied in the office and how much outside?—It is difficult to say, but I should think, roughly speaking, about half and half.

15542. Now to come to questions of policy, will you tell us first what the policy of the Privy Council was as carried out by their Agricultural Department?—Of course the whole question of agricultural education as fostered and assisted by the State was perfectly new in this country at that time, and with the concurrence, I believe, of the Treasury, the policy of the Agricultural Department of the Privy Council was at first very tentative, and was framed with a view of ascertaining the extent of the demand there was for this class of work and of indicating the direction in which further assistance could be afforded. It was so tentative, I may say, that for many years it was a regular rule for the Department to write to each institution, when forwarding a grant, and explain that the grant was made for that year only, and that no certainty of a grant for the succeeding year must be built upon it. As a matter of fact, however, the grants always were continued.

15543. Have any grants been discontinued?—No grants have been discontinued on account of inefficiency. The grant to one institution was lowered in one year on account of circumstances in connection with the work which did not meet with the Board's approval.

15544. (*By Mr. Latham.*) Are your grants at all earmarked, are they given for any special purpose, or are they handed over to the institutions to be spent exactly as they like?—No; the grants are made to each institution in respect of its work as a whole, subject to approval on inspection of the way in which it is carried out.

15545. (*By Lord Barnard.*) With this exception, that the grants given for the farms are distinct?—Undoubtedly; the grants for farms and the grants for subjects like forestry are quite distinct.

15546. Forestry has a separate grant?—Yes.

15547. Touching on what Mr. Latham put to you just now, I should like to ask you very generally whether the Board make any conditions as to their grants or are they merely given as the result of a general survey and inspection of the teaching and the work that is carried on at each individual institution?—They were originally given as the result of a general survey of the institution, and upon information as to what the institution was capable of doing and hoped to do, and the grants gradually grew until they have reached, at any rate, in the case of the higher institutions, a point at which it was deemed desirable to stop, and now no matter how much an institution may have developed afterwards, we are not able to give them any increased grant.

15548. As a matter of fact, the Board in giving a grant make no conditions with regard to it?—No hard and fast conditions.

15549. One condition which occurs to my mind and which has been brought to my notice very prominently throughout this enquiry, might be as to the form in which accounts should be kept and rendered?—We always ensure that the accounts are rendered to us in one particular manner.

15550. Is the form of that account prepared by an accountant, a specialist, or is it merely done by a layman?—The account that is rendered to us at the end of each financial year is a cash account which is submitted by the College itself, prepared by the registrar or other official at the college, whoever it may be, in the form we require; but we also make it a rule that before the grant is considered for another year, the college shall furnish us with an income and expenditure account, properly audited by an accountant. The reason for not doing that at the end of the financial year is this—that a great number of colleges do not use the financial year for their own purposes; some colleges end their financial year on the 30th June and some on the 31st July. That is not an uncommon thing, and it would, therefore, be impossible to get a strict income and expenditure account for the year ending 31st March, but we do see before the grant is made again that a strictly audited account is prepared and submitted to us.

15551. Have you ever in the course of your experience threatened any institution with a reduction, or withdrawal of grant?—Only in that particular case that I told you of in which a reduction was made.

15552. You have made no special demand, for example, as to the college buildings being adequate as a condition of grant?—No special requirements; of course, one would not in the first instance give a grant to an institution unless one were satisfied that the buildings were adequate.

15553. Having been satisfied in the first instance that the buildings are adequate does that hold good for all time?—Unless the buildings alter.

15554. Buildings, as we all know by experience, do alter, and the character of the institution may alter?—It has never reached that point yet in the slightest.

15555. (*By Lord Belper.*) The system has grown up from the beginning; you have only had a limited fund to deal with, and you have not been able to settle any definite system except to give such grants as you do give, according to your means?—That is exactly the case; and there has so far been no occasion to pursue any other course.

15556. That does not preclude you in the future from imposing such conditions as you may find it necessary to impose?—No; it would not preclude the Board at all from that.

15557. (*By Lord Barnard.*) I presume you only allow a grant if, in your opinion, a grant has been earned?—Entirely so.

15558. In the early days these grants were principally given for dairy purposes?—Yes. You will notice that the Paget Committee were especially interested in dairying, and priority was given to dairy instruction over agricultural education. As a consequence the earlier grants were mainly given for dairy classes, but agricultural lectures and field experiments were also included. Following the words used in the terms of the reference to the Paget Committee, the grants were originally given for "Agricultural and Dairy Schools." That was the term by which they were known, but one of the earliest recipients of a grant, in fact in that sense the earliest, because it came in the first year in which the grants were given, was the University College at Bangor, in North Wales. A grant was made to that College in respect of the general agricultural work which was being commenced there. That was in the first year that grants were made at all, viz., in the year 1888-9.

15559. Can you tell us what started Bangor?—Yes, I think I can; I believe, as a matter of fact, that it has been mentioned already in evidence here. The former Professor of Chemistry there, Dr. Dobbie, who is now at Edinburgh, started giving some lectures on experiments in connection with agriculture, and the chemistry of manures, in Anglesey.

15560. After Bangor all these other institutions gradually came upon the scene one after the other?—The Board were much impressed with the advantages of the system which was started at Bangor, and, in consequence of that, other institutions of a similar character in wishing to start agricultural work naturally took Bangor as their model, and after a consultation with the Board followed very much upon the same lines. The advantages of the Bangor system really were that it was practically bringing the best class of teaching in the University Colleges, what one believed to be the best kind of scientific teaching of its class in the Kingdom, in touch with practical farmers, so that the centre could assist the counties in their work, and be of real benefit to those with which they were in connection. The following extracts from a Report published by the Board of Agriculture in 1890-91, show in greater detail what these advantages appeared to be:—

"Speaking generally, it may be said that sufficient experience has been gained to feel assured that the plan of concentration works well, and is one which is capable of imitation. Under no present existing system is such a complete variety of subjects placed at the immediate disposal of all classes connected with farming at such a comparatively small extra cost.

"The quality of the instruction thus offered to farmers is of an unusually high nature, since the initiative is taken by a body of specialists skilled in almost every branch of science. Moreover, under this system, the different classes of instruction, at present carried on in various other parts of the country in an unsystematised and disconnected manner, are here made mutually dependent, while bearing, severally and collectively, direct relationship to the College.

"The dairy schools may be classed as the representatives of the purely technical type of instruction, and are fed by the dairy lectures. In time these schools may develop themselves and become more of the nature of farm schools, in their turn fed by the outside lectures on

agriculture and the sciences allied thereto. Again, the farm school may add horticulture to its general technical curriculum, and also forestry.

"Furthermore, experimental stations for demonstration already exist, and these often serve the purpose of texts for lectures to farmers and others; it is possible to develop these stations still more, and to connect them more closely with the technical school.

"Eventually it might be possible to have in each district the technical school, fully equipped at all points, existing as already said at the farmer's own door, capable of acting as a continual source of information and instruction for him, his sons, and his servants, and also for the local schoolmasters, but dependent for its origin and its maintenance on a body consisting of men whose lives are devoted to the pursuit of education in its most scientific and its highest aspects.

"It cannot be ignored that the key to the whole of this Bangor system is the Board of Agriculture grant. By means of it the College authorities can approach landowners and County Councils, and prove to them that they have ample security that the money they give the Colleges will be well spent, because the whole system has Government approval, and is under Government inspection; without that the system could not be the success which it is.

"It has been shown, however, that a most complete system of agricultural education can be organised by this College; one which will not only fulfil its own proper duties in the six northern counties of Wales, but form a type on the lines of which it may be feasible to organise systematic agricultural education throughout the kingdom.

"It certainly has this merit, apart from the intrinsic value of the instruction given, that under it local effort is called out to its utmost extent, but is at the same time systematised; while the Imperial authority is called upon for the minimum amount of funds which can be demanded by any organised system of agricultural education."

15561. The existing organisation has been largely brought about, as I said just now, by the assistance of the Board?—Yes; we have endeavoured as far as possible to assist local bodies and stimulate them in their work.

15562. After the passing of the 1890 Act, the Board withdrew their grants from local classes, and the County Councils themselves, since 1891, have undertaken a great deal of agricultural work?—They have under the Act.

15563. Before that date the only work of this description was that assisted by the Board?—That is the case.

15564. The Customs and Excise Act, 1890, introduced a new factor into the situation in consequence of what we have often heard spoken of here as the "whisky money" being placed at the disposal of the local authorities?—That is so.

15565. Is that the reason why the Board withdrew their grants?—Yes; the Board considered that purely local classes, no matter what they might be, dairy classes, poultry keeping, agricultural lectures and so forth, should be carried on entirely by the County Councils with the money which was then at their disposal, and that the Board's grants could be made of more value and better utilised by concentrating them upon those centres which were acting for a group of counties, and laid themselves out to be of assistance to those counties.

15566. In fact it seems to me in theory, at any rate, if not in practice, that the Board's work then became more a national than a local one?—Yes; generally speaking that is the case, but that policy was somewhat modified in later years.

15567. You mean by that, I suppose, that some purely local institutions now receive grants?—Yes. At first our grants were given only to those institutions whose work lay over a group of counties, but owing to our being able to increase the grants to a very limited extent some five years ago we were able to make grants—certainly small in amount, but, still, they were grants—to institutions that were working only for a single county, such, for instance, as the Holmes-Chapel Agricultural College or the Uckfield College, the former of which was working only for Cheshire and the latter only for East Sussex.

15568. You seem to attach great importance to counties and groups of counties. Do you think that it is really the best way of spending national money to apply it for the benefit purely of one locality?—We have endeavoured to pursue a totally different policy. In organising the

higher work we have endeavoured to get the whole of the country under institutions, in the first instance, which are working for a large group of counties.

15569. For a group of counties as distinct from the whole country?—As distinct from a single county.

15570. I say as distinct from the whole country?—The different groups make up the whole.

15571. There is one point that is not mentioned in your *précis*, and I am not quite sure whether you can answer it. Can you tell the Committee what the cost is to the country of the educational work of your department?—Of the two inspectors alone?

15572. No; the total cost of carrying on this inspection work?—I could not give you the total cost, because some of the education work is done in other branches of the Board, and it would be impossible to apportion it exactly.

15573. The next point in your *précis* is with regard to inspection. Will you tell us something about that?—A very careful inspection is made of the work of all the institutions which either are carrying on work of agricultural education, or which propose to do anything of that nature; it is, however, not only work such as one would generally understand by the word inspection, but largely that of an advisory and organising character. I think you have heard the fact mentioned at an earlier portion of my evidence that much of the work now being conducted all over the country under the various institutions has been started largely owing to the Board of Agriculture assisting local bodies to establish these institutions. The work is largely organising work as well as that of pure inspection. Centres started by the Board have risen to their present position gradually, and as the result of steady development fostered by the Board. As regards the work of County Councils under the Customs and Excise Act, 1890, by that Act very large sums were placed at the disposal of County Councils for technical (including agricultural) instruction, but no provision was made for inspection of the work. Several County Councils, however, voluntarily placed their educational work under the inspection of the Board of Agriculture, and written annual reports were made to them on the work thus inspected. They were visited regularly and closer relations were established; till ultimately it was found better, instead of making written reports as at first, to meet the committees and discuss with them the different points about their work which one wanted to bring before them.

15574. Are notes kept in the office of that?—Yes.

15575. Supposing there were a motion put on the Paper in either House of Parliament for certain information, the information would be forthcoming?—It would be forthcoming. Ultimately, after the personal inquiry into the agricultural work of all the counties, not only those who put themselves under our inspection originally, but the work of every county in England, the Board determined to extend to all the counties the assistance and advice they had previously given only to a few, and influenced by the fact of the want of provision for inspection under the Act of 1890, the Treasury sanctioned the appointment of an additional inspector for the work. I may say that the policy of meeting the various County Committees from time to time and conferring with them on their work has always answered satisfactorily, and many useful developments of County Council work have taken place in consequence.

15576. I suppose it is an advantage to them and to your Department also to know what other counties are doing?—It is an advantage, I feel sure, on both sides.

15577. It increases your own knowledge on the subject and it enables you to convey to one county the information you have gained from another?—Yes; it enables us to convey to counties in the South-west of England, for example, information that we have gained as to what is being done in the North-west of England.

15578. Then, with regard to the present position of the County Councils?—The present position of the councils is this, that although they are as ready as ever they were to help on agricultural education, if one brings any development involving fresh work before them, even although they see the advantages of it, the difficulty one is always met with, since the fresh burdens laid upon them by the Act of 1902 is: "Where is the money to come from?" When one suggests to a County Council, "Can you not take up a certain work?" they say: "Yes, but can the Board of Agriculture give us a grant?" and the reply has to be that unless there is an institution of a permanent character in their area which might come on the list of those to

Mr. A. E.
Brooke-Hunt.
17 July, 1907.

Mr. A. E. Brooke-Hunt. which the Board gives a grant, it is impossible to aid them. That is the real difficulty at the present time.

17 July. 1907. 15579. When you apply to the Treasury for your sum of £10,500, do you mention at all the institutions you propose to give it to, or do you apply for a block sum and reserve entirely to yourselves the distribution of it? Do you inform the Treasury how you propose to distribute it?—I believe that each year a block sum is mentioned in the estimates, but the distribution of it rests entirely with the Board.

15580. You issue this Report which we have made a great deal of use of here?—A Report is published on the institutions aided by the Board, and it now also contains a report of the work conducted by the several County Councils. I may say that information with regard to the work of the County Councils is collected by means of forms which we send out, and these are filled up by the different County Councils and returned to us. I have copies of these forms here if the Committee would like to look through them. We derive the specific details of the work carried out by the County Councils each year through those forms, and we supplement that with what we know of our own knowledge to be the facts of the case in each county. With regard to information as to finance, we have to be entirely dependent on the County Councils as to how they furnish their accounts and the amounts mentioned under the different heads, but I think the accounts they have furnished show, broadly speaking, what their expenditure is on different branches of agricultural education. I may also say that during the last two years we have published a reprint showing this work of the County Councils in a separate volume, because many of the members of the County Committees do not specially care to study the work set out with regard to the colleges in the earlier portion of the book. If they wish for that information, of course, this complete volume is at their disposal, but we find by simply publishing the work of the County Councils themselves, that the second portion of the book is very much appreciated and appears to be distributed freely amongst the members of the different Committees having to do with agricultural education in the various counties. They can thus see what the work is that is carried on in other counties, and can also see in a clear and tabulated form what the precise work is that is done in their own.

15581. Have you any evidence as to whether these Reports are very much studied?—I think they are since we have had this reprint, and been able to distribute it amongst the County Councils, because the County Committees seem very anxious to have copies; whereas before, when it was in one comparatively large volume dealing with the colleges as well, it was not so much studied. Now, however, so far as I can gather, the County Councils appreciate the reprint very fully and do study it.

15582. Is that all you have to say on the subject of inspection?—Yes.

15583. Now you wish to say something on the subject of the organisation of higher agricultural education?—Yes.

15584. Are these your own private views, or do they represent the views of the Board?—I have had no opportunity of specially consulting the Board, but I think all I mention as regards the past represents the opinions of the Board; of course, any suggestions I may venture to lay before the Committee as regards the future are made on my own personal responsibility, and based on the experience I have gained during the past 19 years in which I have been associated with the work. It seemed best to the Board in attempting to organise higher agricultural education, to begin at the top and organise the higher colleges, as funds were not available for treating the question as one complete whole. A scheme was prepared many years ago, in 1891, dealing with the question as a whole, and it was considered by the Board, but the matter was not pursued further.

15585. What do you mean "as a whole"?—I do not quite understand?—I mean all grades of agricultural education, not only the higher, but right down to the local work of County Councils. The functions of a University College, in connection with agriculture, have been already mentioned. Perhaps they may be summarised as follows:

- (1) To supply the highest course of instruction for sons of the larger farmers and landowners, for agents, and for those intending to become teachers.
- (2) To carry out systematic research.
- (3) To carry out or supervise all local field experiments.

(4) To give expert advice and information to farmers on specific points.

(5) To provide the highest type of lecturers for county work.

15586. What do you mean by providing the highest type—training them?—No, I mean having them on their staff so that they may be of use to County Councils if County Councils wish to have them. And—

(6) To generally assist counties, with which a college is connected, by advice, as regards all their agricultural work, and to examine schools, classes, pupils, &c.

I think I may say to my own personal knowledge that the system has worked well on the whole, decidedly well. I am not quite sure whether all the counties which are associated with colleges really look upon the college as their agent in everything. Some certainly do. The three Ridings of Yorkshire, with the exception of dairy work in the North Riding, carry on their work entirely through the Leeds University: those counties which are associated with the Midland Agricultural College practically do the same; but I am not sure on the whole that there is quite that close bond of union between the counties and the higher institutions which one would like to see. That may still be strengthened, I hope, in the future. I should like, however, to mention, as regards these University Colleges, that since the system first began of giving grants to them, another type of institution has sprung up of the nature, for instance, of the Harper-Adams College, which is carrying on work for two counties. It is a college which is situated in the country and young men have the advantage there of always having farming surroundings, and it carries on practically the whole of the work of a University college as regards agriculture, except as regards the highest instruction and (in the case of a University) the granting of degrees.

15587. I am not an educational expert and I do not quite know what the definition of a University college is. Would you call the Harper-Adams a University college?—No, the Harper-Adams is not what is known as a University college. The University colleges are those colleges which, to the satisfaction of the Treasury in respect of buildings, equipment, endowment, &c., are qualified to give the highest class of instruction in all branches of science, literature and art, and are in receipt of special Treasury grants. Reading is a University college, Harper-Adams is not. But what I wanted to point out was that whereas you have, we will say at Bangor, a University college (which is a constituent member of the University of Wales) carrying on the whole of the agricultural work in that district, you have now a college such as the Harper-Adams College, which is not a University college, carrying on all the general agricultural work, giving courses to the young men at the College, giving lectures in the surrounding counties and carrying on field experiments, but without the power to give the very highest scientific education at the end, and without being able to give a degree. What I want further to point out is that now there are one or two institutions of a University type in the country which while not willing to develop agricultural departments in the ordinary sense of the term, are nevertheless willing to carry on some agricultural work, to conduct research, and to provide a course which would be the final course before proceeding to a degree, and that the two combined really equal our original college carrying on the whole of the agricultural work of the district. In other words, we will say, the Harper-Adams College, plus the University of Birmingham, really equals Bangor. The young men at these agricultural colleges have this advantage, that they live in the country and live, as I have said, amongst farming surroundings, but they lose that intercourse with other students who are carrying on other branches of learning at the University College which always appears to us to be one of the advantages of the University College system. When, however, Manchester and Birmingham have been developed, as the Committee have heard they may be, and Bristol University College and the Royal Agricultural College at Cirencester are brought into the system, and Oxford has developed its agricultural department fully, and when this new college, the Seale-Hayne College, has been started in Devonshire, the Committee may consider that the country will be thoroughly well provided with institutions of the higher type.

15588. You remember the recommendations of the Paget Committee and the warning they gave against these institutions springing up haphazard all over the country?—Yes; they have always been before the Board of Agriculture, and I think we may say we have prevented, if

it was necessary to prevent, institutions springing up at random. All these institutions that have sprung up have only been started after very careful thought and consideration of the needs of the districts in which they are situated; but if these other institutions eventually come into the system, the Committee may be of opinion that the country will be fully well provided, though, perhaps, not too thoroughly provided, with institutions qualified to carry on the highest branches of agricultural education.

15589. You go a great deal beyond the Paget Committee because the Paget Committee suggested one national institution and four others, making five at the outside, and you have already got nine?—That is so, but, on the other hand, I think, if you really look into it, you will see that the recommendations of the Paget Committee have been largely followed. What they recommended was one central institution, in the first instance, for the purpose of training teachers of dairying, and the Midland Agricultural and Dairy College, as it was originally constituted, fulfilled that purpose. The British Dairy Institute at Reading did so also. The Paget Committee also recommended that there should be certain district schools which should carry on, not only dairy work but agricultural work as well, and that the central dairy institution should be developed in like manner. Thus, although we shall have rather more than the Paget Committee recommended, yet the whole system on which they based their recommendations has influenced the Board of Agriculture in supporting those institutions.

15590. Of course every new institution adds considerable expense, a larger expense than probably the mere numerical number of the students would justify?—I think you can hardly look at the number of students actually in the college for the purpose of forming an estimate of the work the college is doing. The college exerts influence in other ways than in the teaching of students, such as in the advice and assistance given to farmers generally, for a large number of farmers now go or send to the staff of each college for advice. That forms a considerable portion of their work, indeed much more than people are commonly aware of.

15591. Have you anything further to say with regard to the colleges?—No, that finishes what I have to say with regard to the institutions making provision for higher agricultural education.

15592. Now with regard to the technical work of County Councils?—I should like to refer, if I may, to the technical work of the County Councils, because one is frequently told that there has been a great deal of money wasted by County Councils in their expenditure on technical work relating to agriculture. I think while, generally speaking, mistakes may have been made at first, there were not nearly as many as there might have been, and the whole of the work of the County Councils in the way of such technical education has, as a rule, so far as it has gone, been of an excellent character. I should like just to refer to the different heads of instruction under which this technical work falls, but I will be as brief as I can with regard to details. The agricultural lectures, wherever these are properly given, I am sure are of very great value indeed, and I may go further than this and say that in Yorkshire, for example, where local agricultural lectures have been given very regularly ever since the department was started at Leeds, the instruction has shown a steady rise in quality as well. Matters are discussed with farmers now at local lectures in Yorkshire which would have been quite out of the question—almost Hebrew and Greek to them—ten years ago: that I think is very fair evidence of the good which these lectures are capable of doing.

15593. You say where lectures are properly given, but you do not tell us whether, in the majority of cases, they are properly given?—I think now that, where given at all, they are given properly. At one time they were not. But I think now all through the counties where this class of work is provided, the character of the instruction is higher than it was and good is being done.

15594. What have you to say on the subject of regular classes and winter schools of agriculture?—I suppose you mean a sort of winter courses?—I can only call them winter schools for want of a better name. I do not mean that special buildings should be erected for these winter schools; I think that secondary schools could help in this respect as regards buildings. These classes should preferably be started in places where there is a laboratory, and simple instruction could be given in agricultural chemistry, botany, veterinary hygiene, mensuration, and so on, the pupils being farmers' sons actually at work on the farm. From my own knowledge of local matters I think the ordinary evening lectures could be increased in value con-

siderably if they were held for a longer period of time at the various centres, and if, instead of four or five lectures only, as is the rule now at a centre, courses were organised lasting right through the winter, say twenty or twenty-five lectures, not only on agriculture, but, as I say, on other subjects as well, such as chemistry and botany, they would be a great success. I have in my mind several classes which have been carried on in that way, where those conducting them have had the advantage of a good building to meet in and where lectures have been given once a week to farmers and young men on agriculture, botany (from an agricultural point of view), and chemistry, and they have been of great benefit and well attended. I may say that I have, myself, seen quite elderly men most busily engaged in examining grass seeds of which before they had only the vaguest possible knowledge, and sorting them out into their different sorts, and, after a time, they have become thoroughly conversant with the seeds which they are in the habit of buying.

15595. Are these classes that you mention actually in existence or is it only a suggestion of yours?—There are some classes of the nature that I have described but they are very few and my suggestion is that they might be very largely developed.

15596. Do you suggest that a register should be kept of those who attend, or would you allow the students to come just as it suited them?—Those who conduct the work always take a note of the pupils that are attending.

15597. What I mean rather is, do you suggest that anybody passing along can walk in, or do you suggest that the names should be enrolled on a register as to each course of instruction given and some kind of certificate awarded at the end?—I do not suggest that anyone could walk in as they choose; the classes would be properly organised by the county carrying them on, and those responsible for them would see that there was a sufficient number of young farmers in the district willing to join before they were started.

15598. Do you mean the classes at these "winter schools" would be regular classes of which every member was registered at the beginning and then something done at the end, in the way of awarding a certificate or something of that sort, as a proof of the education that had been given?—Yes, a certificate might be given, but I do not know that a register would be necessary.

15599. Judging from the evidence given before us particularly from Scotland—I think from Mr. Macdonald—a certificate should necessitate two points: first, regular attendance and steady work during classes; and, secondly, some examination or test at the end?—Yes; undoubtedly there should be a record kept and a note made of those who attend. The only thing I was in the least hesitating about was your use of the word "register." Young men do not mind whether their names are registered or not, but you would get elderly men attending these classes also who would come possibly very regularly indeed, but who would very much dislike to have their names put upon a register and be marked up, perhaps, five minutes late or anything of that sort; but a list of those who attended, simply tabulated, I do not think they would object to. They would be regular systematic courses and I think, as I say, that the secondary schools might be of very great assistance in this respect, because they have the buildings already provided and teachers usually in chemistry and very likely in botany, and I think it might be perfectly well arranged that at certain of these secondary schools they could carry on this class of instruction, say, once or twice a week in the late afternoon. If so I do not think it would be difficult to get young fellows from the immediate neighbourhood, from villages within, say, a radius of six or seven miles, who would come in on their bicycles, and very likely you would get a number of those who had attended the schools in the day time. The secondary schools would have the buildings there, and I should think it is very likely that they could be used in the evening in that way.

15600. Do you know of any school being so used?—I have mentioned the matter in some places, but I do not know of any being used in that way at the present time. I should like to say further as regards agricultural lectures that, where they have been given, the old prejudice that farmers had against agricultural teaching has, if not absolutely and entirely, very largely now broken down. Farmers begin to see the advantage to them of science as applied to agriculture.

15601. I hardly think you need elaborate that because we have heard a great deal of evidence in this room on that point. Shortly, you confirm it?—I confirm it most

Mr. A. E.
Brooke-Hunt.
17 July, 1907.

Mr. A. E. Brooke-Hunt. thoroughly in every possible way; I would even go further.

17 July, 1907.

15602. (*By Mr. Latham.*) I think we might fairly assume this: where lectures have been a failure, it never has been the lectures that have been at fault; it has been the lecturers?—Wherever there has been any fault it has not been in the subject so much as the way it was treated.

15603. (*By Lord Barnard.*) You have something to say about agricultural labourers. You refer the Committee to the evidence you gave before the Small Holdings Committee?—Yes; I suggest that these winter schools might be of very great use to the young farmers but, as regards the agricultural labourers, I should like to see the experiment really well started of a practical school for labourers' sons. It would, no doubt, be far from easy now to get it carried out as there are many difficulties in the way, but at the same time, if it could be done, I think it would be well worth the experiment.

15604. (*By Mr. Medd.*) Have not you frequently recommended that the Mercers' Company should award leaving scholarships from elementary schools tenable at Reading?—No; certainly not from elementary schools.

15605. (*By Lord Barnard.*) When you talk of a practical school for labourers' sons, do you contemplate outdoor classes?—I will not say entirely, but very largely outdoor.

15606. Would the loan of a village school in the evenings suffice for the purpose?—No; that would not be a suitable arrangement because the work would need to be carried on in the day time and, in all probability, some of the pupils would be resident.

15607. You contemplate them spending their whole day at these classes then?—Certainly.

15608. (*By Mr. Latham.*) May I just ask at what age you would suggest they should go?—On leaving the elementary school; but I quite admit it would be a pure experiment and there would be very great difficulties in the way, although I do not think those difficulties would be insurmountable, and I am of opinion that it would be well worth trying the experiment.

15609. (*By Mr. Davies.*) Has not that experiment been tried at Bedford already?—It has, but not under conditions by means of which it might have succeeded.

15610. (*By Lord Barnard.*) It has been tried at Bedford but not under favourable conditions?—That is the case.

15611. Now, with regard to field experiment?—As regards field experiments I should like to emphasise the fact that they are absolutely essential everywhere, but the whole question requires very special consideration and development on lines which need to be very carefully thought out. Personally, I should like to see in every county a complete system of temporary plots for the purpose of testing soils, so that eventually what one might call a "soil-manurial" map might be made for the whole of the country. If that could be done you would have fairly accurate knowledge of the manurial requirements of the soils occurring on the different geological formations throughout the country.

15612. (*By Mr. Latham.*) Does that bring us to the point that you would issue a sort of syllabus to the several education authorities that those plots should be carried out at all the different centres?—I am afraid, under present conditions, that would not be workable.

15613. I thought that was what you were rather suggesting?—Eventually, if the conditions became more favourable and there was money at the Board's disposal to promote the work more completely, then, undoubtedly something of the sort might be done, and it would really settle the soil question all over the country. I would have also other plots in as many places as possible in each county each year to test some particular practical point which the farmers of the county might want tested. Further, I should very much like to see in each county one or more permanent manurial stations; they need not necessarily be farms in the ordinary sense of the word, but places where, having eliminated the question of soil, experiments of a more detailed character might be carried out and the results obtained in each county generally tested. Stations like that might also go in very largely for testing different varieties of each of the farm crops; for example, different varieties of wheat or barley which are used or likely to be used in the county.

15614. They would become research stations?—They would become more or less research stations.

15615. (*By Lord Barnard.*) Would you suggest that they should have any Government grant?—Undoubtedly they would require Government money before they could be started at all. I do not mean to say that Government money should be granted specifically for these stations; they would be part of the general scheme of each county which the Board might subsidise.

15616. (*By Mr. Latham.*) Is not that very largely carried out now by giving the several institutions opportunities of going on to certain farms and carrying on experiments? Is not information more readily disseminated in that way? I think Reading, for example, has nearly 20 farms where they have an opportunity of carrying out these different experiments?—Yes; no doubt a great many of the colleges have those facilities, but I should like, in addition, to see each county with its own permanent station.

15617. Would not it be better if you could get farmers in the different places round—I do not say in Berkshire or Buckinghamshire or Oxfordshire, because they have nearly 20 farms allocated to the College, but in other counties—to allow the colleges the use of their farms for the purposes of carrying out these experiments; you can call it research if you like, otherwise I think it would be localising it too much?—Yes, but beyond that, I think you want some permanent stations for more detailed and precise work.

15618. (*By Lord Barnard.*) You agree with me that it would be perhaps advisable for the Board to assist in systematising all these experimental stations?—Yes, as much as possible.

15619. So far as they are likely to be useful to the State?—Undoubtedly.

15620. Then as to dairying?—Probably in the country generally, including those which are at the different colleges, the Committee may consider there are enough permanent dairy schools, but there is room, I think, for a good many more of the peripatetic butter and cheese classes throughout the country. That was taken up very fully at one time, but now it has been rather dropped. I would like to suggest also that the system of having a migratory teacher of cheese-making in certain districts of the country requires considerable extension. It has been carried out in the North Riding of Yorkshire, and to a certain extent, I think, in Lancashire, and I know that, in the North Riding especially, a considerable amount of good has been done. The teacher goes about from farm to farm giving instruction and advice, and the people there so welcome his visits that they are, as I know, constantly telling him that they have been looking forward to his visit and wondering when he would be coming again. What has been done throughout the country generally in dairy work I am sure has been of very real value, and to my personal knowledge I may say that one never comes across any really bad butter nowadays as one did fifteen or twenty years ago.

15621. One witness from Lancashire told us that the butter that was made there was rather curious stuff?—Yes, I quite admit that perhaps in one or two north country towns, where they like things a trifle strong, you may get butter that you might not approve of, but comparing the butter that is made now with the butter that one used to get twenty years ago, I can see an enormous change for the good.

15622. With regard to the dairying classes to which you refer, those would not only be for the instruction of youths, but for the assistance of those who are actually engaged in the industry?—They are not for youths at all, but for those actually engaged in the industry.

15623. Your next item is poultry keeping?—Poultry keeping is a growing industry and an industry that lends itself to very great extension. It is especially of value to small men and cottagers. There is, I venture to think, need for some poultry stations where experiments can be carried on and instruction in poultry keeping should, I consider, be encouraged as much as possible. Especially amongst small men I have seen wonderfully valuable results coming from it, and, although poultry keeping is a small branch of general agriculture, it is becoming more and more of use to the farmer himself.

15624. It has made much progress?—It has made very considerable progress; one has only to go up and down the country to see it.

15625. And we may hope that it will continue to do so?—Yes, and it should be fostered as much as possible in reason.

15626. Does the same apply to bee-keeping?—The same undoubtedly applies to bee-keeping in a lesser degree.

Mr. A. E.
Brooke-Hunt.
—
17 July, 1907
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15627. Then as regards farm hygiene?—With regard to farm hygiene which is another subject taken up by some County Councils as well as by some of the colleges, lectures on this subject, where given, have been of very great value. Personally, I have never found any difficulty arising with local veterinary surgeons. They have never really complained about the work that is done by those who are engaged upon it. Farm hygiene bears the same relation to farm stock as lectures on domestic medicine bear to the human subject, and, if properly handled, there is very little difficulty to be apprehended with the local veterinary surgeons, in fact it rather plays into their hands than the reverse.

15628. Farm hygiene depends on the conditions of the buildings to a great extent?—To some extent.

15629. It has been thrown at my head on some occasions that the construction of the buildings is a landlord's job?—That may be the case, but management of the stock does not entirely depend upon the buildings.

15630. As I began by saying, farm hygiene depends to a great extent upon the condition of the buildings?—To a certain extent. It does not depend on the construction of the buildings entirely, but no doubt that has something to do with it.

15631. Not entirely, to a great extent?—To a certain extent; I would not say to a great extent.

15632. So that it is a matter of importance to other classes, land owners and land agents, and so on, as well as farmers?—Undoubtedly.

15633. Then you have something to say about farriery?—Instruction in this subject has only been carried out, comparatively speaking, in a few counties, but I think it would be an advantage if it was extended to all. I might say the prejudice amongst smiths was very strong at first, and now it is just the opposite. Owners of horses, however, ought to back up the instruction by being willing to pay rather more for first-class work.

15634. We have had a great deal of evidence on that subject. Have you any suggestions to make as to that? Do you think there ought to be more public money given?—Undoubtedly. The work ought to be carried on in far more counties than it is carried on in at present; it ought to be carried on in all counties; it is of very great value indeed both to owners of horses and to farmers and to everybody who has to do with horses.

15635. I have no doubt you have attempted to encourage counties who do nothing in this direction, to undertake farriery work?—Yes.

15636. Can you give the Committee any idea of the reason why some counties have not carried out any farriery instruction?—The original reason and the reason that exists now is because of want of funds. Some have carried it out on the recommendation of the Board, but as a rule now, if one recommends it, they say they really cannot afford it; that is the chief reason.

15637. Can you make any suggestion as to how the counties which do not take up this subject might be induced to do so?—It all hinges on the question of expense. If the Board of Agriculture were enabled to assist County Councils directly in their county work, I have not the slightest doubt that all the work that I have been mentioning would be carried out and increased.

15638. Now, as regards manual processes?—Instruction in manual processes is beginning to fill a very great want both for young farmers as well as labourers. I think the good which is being done is probably hardly yet realised. Possibly it wants organising on a rather more systematic basis as regards qualification of instructors and the different ways in which instruction is given, but I should like to emphasise the fact that the work in those counties in which it is carried on is doing real good among young farmers and labourers, and deserves every possible encouragement.

15639. Do you think that if prizes were offered, that would be a good means of encouraging such work?—Prizes are given now, but it is a matter to which I think some consideration should be given. While the County Councils carry on the work of this manual instruction, I, personally, should like to see the local agricultural societies come forward more fully than they do and give prizes for it. I think in that way you would make this work very popular.

15640. Then with regard to horticulture?—Horticulture is a subject that I should like, with your permission, to draw particular attention to. I think horticulture is second to none in importance; and that thoroughly good work is already being done in several counties which should be extended to all. I think it is one of the most direct

ways of helping to keep young men in the country. I see on every side the immense value of the work which is being carried on, and the way in which this system of lectures in horticulture is giving men an interest in the country which they had not got before, and is tending to keep them there.

15641. I do not know whether you agree with me, but the impression I have derived from some of the evidence that we have had is that horticulture is not a very profitable employment?—I think it is profitable in many ways for these smaller men. I do not mean to say that it is an employment in which women can set up horticultural establishments of their own and make them pay, but I am perfectly certain for the small men in the country, the labourers, and so on, it is distinctly profitable, and I have constant evidence as regards that. It is also a most important thing to the labouring population throughout the country, in that it enables them to grow better vegetables for their families to eat; in many cases also it forms an addition to their income, and altogether makes their life different from what it was before.

15642. (By Mr. Medd.) Do not you think it is mainly a question of co-operation?—Not in the least.

15643. You have no belief in co-operation?—I do not say that at all, but this is not a matter of co-operation. The question that I am now on is one of individual labour.

15644. (By Lord Barnard.) Your next heading is school or other gardens; do you find that school gardens are a success?—School gardens are doing a very good national work amongst the young in giving them an early training that helps to keep them in the country in a way that nothing else does, but I think that school gardens ought to be managed on very practical lines.

15645. Do you think the Board of Agriculture might co-operate with the Board of Education on that point?—I think the Board of Agriculture might very easily co-operate with and assist the Board of Education in getting the gardens attached to elementary schools, which, of course, come under their supervision, kept on thoroughly practical lines, because I am afraid, if they are run in any other way, they will very soon cease to have the value they now have in training lads to be thoroughly good workmen.

15646. (By Mr. Medd.) Do you inspect the gardens in Staffordshire?—I have inspected a great number of gardens in Staffordshire.

15647. Connected with elementary schools there?—I have informally seen some of these, but the gardens I have inspected are those which were originally started and managed by the County Council for elder lads and young men.

15648. Is Mr. Graham Balfour, the man who has done so much for school gardens, to be called here as a witness?—The man who did so much to get these gardens started, unfortunately, can no longer be called here; he is dead.

15649. (By Lord Barnard.) You mention gardens for elder lads?—Gardens for elder lads and young men, I think, should be furnished by County Councils as far as they may be able to do it, because they, too, are capable of doing a very great national work.

15650. Are there any such gardens now, furnished by County Councils?—Yes, many of them.

15651. You think they should be extended?—I think they should be extended very considerably.

15652. We have heard a great deal of evidence on this subject, so that we do not want to go too deeply into it now. How do you propose to appoint the teachers?—Usually there are good local men who instruct, supervised by the County Council instructor—I am alluding to the gardens for elder lads and young men, not those attached to day schools.

15653. Now fruit stations. We have also heard a good deal on that subject?—There can be no doubt that fruit growing is making steady progress throughout the country, and as long as the country generally is prosperous, I think there is no fear of it being over done. The counties should be encouraged as much as possible to have one or more such stations in their area, such as the one the Worcester-shire County Council have at Droitwich, and these should be linked up with some permanent station such as the National Fruit and Cider Institute near Bristol.

15654. You think that these fruit stations possess a commercial value with regard to fruit growing?—Distinctly.

15655. With regard to the training of elementary school teachers, are you of opinion that the Board of Agriculture

Mr. A. E. Brooke-Hunt. might usefully co-operate with the Board of Education ? That, of course, is as to teachers who are going to rural schools ?—Yes, I think the two Boards might usefully co-operate as regards the training of teachers who are eventually going into those rural elementary schools, or who are already in those schools.

17 July, 1907.

15656. You will admit, of course, that such a subject as that is a matter entirely for the Board of Education ?—Yes.

15657. The Board of Agriculture can only treat with the Board of Education in an advisory way, so to speak ?—Yes, but at the same time many of the institutions which we aid at present do conduct those classes.

15658. That completes your review of the various subjects of instruction given by some of the County Councils ?—Yes.

15659a 15659. You refer to two extremes, the colleges and Universities at the top and the County Council itinerant work at the bottom, and you say that, between those extremes, there are three classes of institutions to which the attention of the Committee may be drawn ?—Yes, I have endeavoured to draw the attention of the Committee to colleges conducting the highest class of agricultural education and to the purely county work which is of a general, and practical kind. Between those two, there is a very wide field of work, which is, or may be served by institutions grouping themselves into three classes. In the first come special institutions, such as those conducting dairy work other than at colleges. Perhaps the Committee will consider that the dairy side of the Midland College, the British Dairy Institute, and the Eastern Counties Dairy Institute fulfil the wants of the country at present, so far as the higher branches of dairy work is concerned, but it does not follow that these Institutions may not be capable of further development.

15659b Then, as regards special horticultural institutions, the National Fruit and Cider Institute, the Horticultural Department of the University College, Reading, which I venture to say has done most admirable work, and the proposed new horticultural institute in Surrey—of which you have possibly heard—coupled with the Horticultural Station at Wisley, will, with subsidiary county stations, perhaps seem to the Committee to fulfil the present requirements of the country in this respect.

15660. To what do you refer as the proposed new horticultural institute in Surrey ?—There was a large bequest left by a Mr. Innes who lived in Surrey, a portion of which was left for the purpose of founding a horticultural institute, and I think it is possible that under that Will a fairly large amount will eventually be spent upon an institution for giving practical instruction in horticulture.

15661. That will be an endowed institution ?—Yes, largely so.

15662a 15662. If only largely so, from what other sources do you anticipate an income ?—Of course, all these institutions, even when they are endowed, eventually come to the Board of Agriculture and say they want more funds for developing the work. Then there is another class of institution that I wish to draw the attention of the Committee to, and one that I think merits their attention, and that is farm institutes or so-called "farm schools." You have had evidence before you from certain institutions which have generally gone by the name of "farm schools," such as that at Basing and the one at Newton-Rigg in Cumberland. I think "farm schools" is an erroneous name for such institutions, or, rather, it leads to an erroneous impression being formed of them, because people imagine that farm schools are for the training of children, whereas they are nothing of the sort ; they are really for young men or young women. This class of institution was foreshadowed in the Report made upon Bangor, previously referred to, where it was suggested that there might be practical schools—that the dairy schools which were then acting in connection with the University, might develop into schools of practical agriculture for that particular district, and it is institutions such as these that I suggest to the Committee are the great want in the country at the present time. The functions of such institutions really should be (a) to form the local centre from which all peripatetic county work should emanate, and to which it should point. In very many cases the county work is disjointed and has no definite aim. Such an institution should gather up all this work and focus it. If two counties combine (as Cumberland and Westmorland have done) to support an institution like this, and carry all their normal work out through it, definiteness and permanence would be given to the work. (b) To form the first place where

young men or, indeed, older men (but *not* children) should obtain those short and thoroughly practical courses desirable for them ; where the sons of the smaller men, as well as others, should receive their agricultural instruction, and to which they should be taught to look in after years. There, young men in winter should be taught the reason of the simplest operations and practice (the inner meaning, as it were, of everything) ; the use of different machines or implements, how to take them to pieces and put them back again ; there they should be taught neatness and method and have instruction in the minor industries of the farm such as poultry keeping, and there simple experiments should be conducted to show them how to carry out such on their own farms in after life. In summer, the institution would be open for young women to receive instruction in dairy work and poultry keeping. (c) To form for the best young men a feeder for the higher college, but these farm institutes should, in turn, be fed by the winter classes or "schools," which I have already referred to. Then the third class of institution, which I think is worthy of the attention of the Committee, is the agricultural school, on which the Committee have had some evidence. These schools are for boys and not for young men. I draw a distinction between them and the farm institutes, because the farm institutes are for young men after they have been on the farm for some time. These are for boys at school. They should, so far as my personal judgment goes, usually serve for the sons of the larger rather than the smaller farmers. Their "atmosphere" should be thoroughly agricultural, but they should embrace general education as well. They should act for a much larger group of counties than the farm institutes, and the Committee will probably be of opinion that only a few are needed to begin with. They, too, should act as a feeder for the colleges.

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15663. What you say on that point is very largely a matter of opinion and trenches upon the debatable question of general secondary education ?—That, certainly is the case, but I should like to point out that the majority of pupils attending these schools would complete their education there entirely. Thus such schools would not come into the question this Committee has so often had before them, that a boy before taking up an agricultural course at, say, a university college, should receive only a general education.

15664. I think we may accept it from you that it is your view that in the case of boys who are going to be practical farmers, it would be desirable that they should be educated at schools of this character ?—Personally, I think it is highly desirable that schools of this character should be fostered to a limited extent until it is seen what their actual value is. From my own knowledge of the work carried on at West Lavington, which by its scheme is placed under the inspection of the Board of Agriculture, I think that if it was organised as I should like to see it organised, its value would be very great indeed.

15665. That really concludes all the definite items upon which you wish to offer us your views ?—Yes ; but I should like to add that I think agricultural education in all its grades wants looking at as a whole and a real national system built up.

15666. Do you say that because you do not think it is looked at as a whole now ?—I do not think it is sufficiently so. The Board of Agriculture, of course, have only had limited funds and are only able to actually assist the higher colleges, and there has, consequently, never been the opportunity, it appears to me, of thoroughly looking at the agricultural education of this country, the practical and technical education of the country, really as a whole. I think this Committee may be enabled to look at it in that light and to assist the country in that respect.

15667. There, of course, you adopt my view of the national—not as opposed to it, but as distinct from the purely local point of view ?—I am looking at it now from the purely national point of view. I think State and local authorities should go hand in hand and the whole system financed, not on a hard and fast rule, allowing one fixed sum and no more for each type of institution, but according to the needs of each place, such needs to be judged by the staff, work and equipment of each.

15668. Is that not the case now that the needs of each place are judged according to the staff and the equipment and the work that is done ?—Yes, but you have the same fixed grant for all the higher types of institution, no matter whether they receive £5,000 from local funds and the total staff employed involves an expenditure of £2,000

Mr. A. E.
Brooke-Hunt.
17 July, 1907.

or £3,000 a year or whether only a half or a quarter of those amounts is dealt with.

15669. When you say you are only enabled to give the same grant, you mean that you are only able to give the same maximum grant?—That is so.

15670. But you must have a limit surely in any case?—Undoubtedly; but the limit I suggest should be bounded by the requirements of the institution.

15671. Who are to be the judges of that?—Undoubtedly, the Board of Agriculture. My point is that each institution of the higher type receives what has to be our maximum grant, because it is impossible to spend further funds; the funds are not there to expend upon it.

15672. What I do not understand is why it should be a maximum grant in each case?—Of course, when first started, institutions grew, and as they grew their grants gradually grew also; they got more one year than they got the year before, because they were doing more work; but then we arrived at a point at which it was felt we could go no further, and that point now, in my humble opinion, is past.

15673. That limited maximum grant is only an internal regulation fixed by yourselves, is it not?—That is the case, on account of the amount of the funds placed at the Board's disposal.

15674. I mean it is not prescribed by Parliament?—Certainly not.

15675. It seems to me you have reached a sort of mechanical arrangement now by which each institution is absolutely certain of its grant, and although it cannot get any more, it is certain not to get any less?—With the highest institutions we have reached the limit at which we say "Unless we are furnished with more funds"—which was the answer that was given to the Deputation you introduced to the Board in December, 1905—"however much we should like to do it, and however much you may develop, we cannot give you more."

15676. (By Mr. Latham.) You say that "the needs are to be judged by the staff, the work and the equipment." Is that a good standard to go by?—What I mean is that some institutions may be doing admirable and excellent work but they can only employ a small staff. Another institution—take any one institution you like to name—doing far more work, treble and quadruple the work, must employ treble or quadruple the staff, and I think, having thought it over very carefully, that you can only really differentiate between the work of different institutions by considering what their expenses are. The Board would have to consider what are the proper expenses which an institution doing this work should properly incur, and having considered that, you could give your grants accordingly.

15677. Do you not wish it to be ruled at all by any subsidy of the local authority?—I think the grant of money which the local authority is willing and able to produce should, of course, be taken into consideration, but here in some cases you have one set of local authorities spending, say, £5,000 in respect of an institution and, in another case, other local authorities spending, say, £1,500, in respect of another. We have not got the means of saying that we will make a difference between those two institutions. We can only say that they are carrying on under our direction, and have carried on, the best type of instruction that we think they can carry on, and that the one in receipt of the smallest local funds is still, in the Board's opinion, fully entitled to their maximum grant at its present figure, but that, as regards the other, we have reached a limit of grant beyond which we cannot go.

15678. Some of the County Councils give little or nothing?—Quite so.

15679. The consequence is that those counties that give nothing will count as being badly served in the way of higher education?—Very badly served indeed; that is the case at the present time.

15680. And you cannot help, or ought not to help, in my opinion, unless the counties do something themselves?—I think all those counties which are doing very little work now would do very much more if one could encourage them by a proper system of grants.

15681. Yes, but it should be on those lines?—Yes, there might be some general idea as to what proportion might be borne by the State and what by the local authority in the case of each grade of institution. This would enable the Board to urge with some force on each locality the employment of an adequate staff and the carrying on of proper work.

15682. (By Lord Barnard.) I am not a member of a County Council at the present time and therefore I am not really personally familiar with County Council finances, but from whence is the county going to obtain money for this purpose?—Only from two sources, the "whisky money" or from a rate.

15683. Is not the "whisky money" already hypothesized?—To education, but not so far as I am aware to any specific form of education. The money which is still being spent on all this county work is largely, almost entirely I may say, from what is popularly known as the "whisky money."

15684. You yourself have told us that you are always met with the answer "Where is the money to come from?" I do not myself understand where it is to come from?—As I say, I think it could only come out of a rate where there is absolutely a lack of funds from the "whisky money."

15685. That is the second alternative, but have the counties power to raise a rate for this purpose?—Yes—in fact, more than one county has already done so.

15686. Does not that bring them under the jurisdiction of the Board of Education?—Not that I am aware of.

15687. You do not know?—No, that I do not know; I cannot answer that question.

15688. You consider that these institutions ought to be allowed to expand?—That is the main thing, from the colleges down to what I call the farm institutes. The main thing should be that institutions and their work should be allowed to expand as from time to time the Board found advisable, and that there should be elasticity in the whole scheme. For instance, although farm institutes are suggested for each county, or group of two or three counties, yet, where there is an agricultural school like that at West Lavington, it might possibly act as the centre for the county work and no farm institute be needed.

15689. What is it which prevents them from expanding now?—Want of funds. Perhaps I might add that what seems to me to be one of the main requirements, in order that there may be a complete system of agricultural education throughout the country, is that in each county or group of two counties, there should be an agricultural instructor and a horticultural instructor, and others in poultry keeping, bee keeping, &c.; together with local instructors in manual processes, all connected with the local farm institute. I will not any further pursue the subject of the farm institutes or of what I suggested with regard to the agricultural schools as I have already gone fully into them. I simply say that I think all that I have suggested means a development of the existing system which has practically been built up out of nothing; and the sole requisite is the means to freely expand. But I feel sure that in the future, as in the past, the State must lead; it will not do to wait for the localities to demand it; the State must, as far as possible, form public opinion on the matter and lead as it has done in the past. Might I in this connection read some recent remarks of Professor Rice, of Cornell University? They are, I think, very much to the point.

"It may not be considered out of place to digress long enough to say, that just in proportion to the wise liberality of the Government of a country in aiding by education and experimentation the producers of wealth from the soil, will that country win out, other things being equal, in competition with other countries of the world. Knowledge is power as truly in agriculture as elsewhere. Knowledge will ultimately triumph. Inasmuch as the nations of the earth are competitors in the markets of the world, it behoves each nation to arm its people with the most formidable weapon of either peace or war—educated minds and bodies. The Government that fails to recognise this truth voluntarily handicaps itself in the race with other nations, which in many instances these days are alive to the welfare of the people. The importance of this principle is particularly true when applied to the training of people engaged in the production and sale of the products of the soil. Therefore, money expended for Agricultural Schools or Experiment Stations is wisely invested. It is gratifying to note that England, which enjoys such an enviable reputation for good farming and progress, is not to be outdone by the other nations of the earth."

THIRTY-FIRST DAY.

Wednesday, 19th February, 1908.

PRESENT :

The Right. Hon. Lord REAY, G.C.S.I. G.C.I.E. (*Chairman*).

The Lord BARNARD.

The Lord BELPER.

Lord MORETON.

Mr. F. D. ACLAND, M.P.

Mr. DAVID DAVIES, M.P.

Mr. NORMAN LAMONT, M.P.

Mr. THOMAS LATHAM.

Mr. J. C. MEDD.

Professor T. H. MIDDLETON, M.A., M.Sc.

Professor WILLIAM SOMERVILLE, D.Sc.

Mr. H. S. STAVELEY-HILL, M.P.

Mr. A. E. BROOKE-HUNT (*Secretary*).

Mr. H. L. FRENCH (*Assistant Secretary*).

Mr. F. G. OGILVIE, C. B., called and examined.

Mr. F. G.
Ogilvie, C.B.
19 Feb., 1908

15690. (*By the Chairman.*) We should be glad to have any observations you wish to make on elementary and secondary education as connected with the reference to the Committee on Agricultural Education?—The point to which I wish to direct attention in that relation is that the whole question of education with reference to the interests of those who are at work in connection with agriculture is so knit together that it is quite necessary, in order that you may have a full perception of the position of the Board of Education in the matter, that I should put before you in outline the view of the Board as to their duties in certain aspects of secondary and elementary education. I will put that very shortly, if I may, because, while it is necessary to do so in order to get at the difficulties and possibilities in reference to adult education, it is not necessary for me to go into detail in the matter unless there is any point upon which any member of the Committee would desire to have further knowledge. I quite understand that the information the Committee desire to have from me refers to the section of the field of higher education that has special reference to the wants of those whose interests centre upon agriculture, and in particular, the point to which the Committee desire me to direct attention is that section of the field that relates to more advanced education—education, that is, in institutions for pupils who are beyond the ordinary limits of the school age. I also understood that you were limiting your inquiry to the case of higher institutions, that is, those of the standing of university colleges, and those more or less corresponding to that; I have learnt, however, from the Secretary that that is not the case, and that as a matter of fact you are engaged, or have been engaged, in considering also the development of the education provided for those who have left school, and are already engaged in some rural occupation, who are no longer giving their entire attention to study, but are typically represented by the evening students in town schools. That section of education is one which includes a very great variety of types of instruction, and I shall, therefore, devote some attention to-day to the methods by which the Board has been developing work in that direction.

15690b In the elementary school the function of the school is set in the forefront of the Code of Regulations which is placed on the table of the House annually, and forms the text, practically, of all elementary education. I would direct your attention to the first sentence of the introduction to the Code, which is this: "The purpose of the public elementary school is to form and strengthen the character and to develop the intelligence of the children entrusted to it, and to make the best use of the school years available in assisting both girls and boys, according to their different needs, to fit themselves practically, as well as intellectually, for the work of life." Now, the key-note of the Code in the case of rural schools is an insistence upon the development of the intelligence by including in the general course in the public elementary school such training, through matters of rural interest, as is most likely to attain the end in view. The work of the Board in that direction has

taken the form of developing nature study, of cultivating habits of observation, and generally of giving instruction in such a way as to encourage the development of observation and intelligent appreciation of the results of observation. I need not go into detail in the matter, but I may say that at a considerable number of places in the Code the indications of that are very obvious; and, further, the work of the inspectors under the Board who are engaged in inspecting elementary schools is systematically biased in the rural schools with the object of encouraging instruction of that sort. I may refer again to the Code, where you will see that under the head of observation, lessons in nature study, under the heading of geography, and so on, we have many of these points; and again we have the fact that in a country school the Board are prepared to approve a syllabus for arithmetic, or a syllabus in which the teaching of history, arithmetic and geography is less advanced than usual, provided that the time so occupied is devoted to the nature study of subjects suitable for country children. They therefore have set particularly in the front of their statement of policy in the matter of elementary education in rural districts the special cultivation that is desired there. It is a matter of regret that up to now the success, which has been considerable, is not anything like as great as people wish. I shall direct your attention presently to a few of the reasons for that want of full success; and as to the relation of methods for securing greater success, I shall direct your attention to other points that we have to consider. But there is one point I must draw attention to. The Board offer in the Code certain grants for special instruction, grants, that is, which cover the possibilities of giving instruction in dairy work, gardening, handicraft, some suitable for one type of work and some for another. In certain sections of that work the county local education authorities have done a great deal of good work, while in others they have scarcely touched on its possibilities. I mention that to show that there are grants offered in the Code which afford, wherever it is desired, aid for adaptation of the school curriculum to local circumstances. The Board, in fact, recognise the need for elasticity in the matter of the adjustment of the school curriculum, and they also realise that experiment in these matters is occasionally extremely desirable. They always endeavour, however, in the matter of introducing novelty of method of instruction, to guard against any waste of money or of effort in untried methods. They have methods tried, and those which are found successful are sanctioned for adoption wherever the conditions justify that.

15690c Then I would speak shortly of the provision made for higher elementary schools as well as the provision in the upper classes in rural districts. Special suggestions for the utilisation of the later school years of pupils who can remain in school for a year or two beyond the normal period of school life have been set out in a recent publication under the authority of the Board. That publication, while including very many valuable suggestions, is pur-

posely issued without the Board's imprimatur that everything that is in it ought to be adopted everywhere, but with the idea that it ought to be considered in relation to the special circumstances of each case. Those are the suggestions on rural education by Mr. Dymond, one of the inspectors of the Board. In that pamphlet the question of the function or possibilities of higher elementary schools in rural districts is discussed at some length. I, therefore, propose to put in a copy of that publication, to which I shall make sundry references, and I do not propose to go into detail in the matter. ("Suggestions on Rural Education," by Mr. T. S. Dymond, was handed in.) I should say simply that the higher elementary school is an institution that has undergone some considerable amount of examination in this country in the course of the last few years, and is now specified officially in a form that does afford very great opportunity of adjusting the organisation of the school to the requirements of the locality, and this particular grade of school is one which undoubtedly affords the possibilities of development required in country districts.

15690f Then with regard to secondary schools, I need do little more than remind the Committee of the general aim and the course of instruction in a secondary school. It is an aim including a general training of the faculties on a more liberal basis than is possible in the case of students whose only school time is that within the limits of the public elementary school. But I would also remark that in all secondary schools, whether country or urban, science and drawing are included amongst the subjects of instruction. So that where the student for an agricultural college has been trained in a secondary school before going to that college, and where he has passed through the entire curriculum of a secondary school, he may be expected to have had not merely the general training in literary subjects, and in arithmetic, and mathematical calculation, but also such training in science, both experimental and observational, as will form a satisfactory basis for the specialised study which he is to undertake in an agricultural college. Apart from that, which may be called the normal aim of the secondary school course, the Board in their regulations for secondary schools have made certain special provisions. For instance, in Sections 9 and 10 of the Secondary School Regulations there is provision for advanced scholars, or special classes, which, with the approval of the Board, may follow a course of study different from that approved for the ordinary school; that is, it is possible for a secondary school which is established in a district with a well marked interest in one particular industry, or set of industries, to develop on the top of the more general course a specialised course particularly adapted to the needs of the scholars there. There are, however, besides schools of that type, secondary schools in rural districts where the population is not large, and where the number of pupils who can be expected to remain up to and beyond the age of 16 is not great, and in such cases the Board has prescribed that 15 years of age may be taken as the limit, and a three years' course taken instead of a four years' course is the limit for the qualification of the school for acceptance as a secondary school. These points indicate, in the case of the elementary and secondary schools, the nature of the desire of the Board to cultivate the assimilation of the school curriculum to the requirements of the pupils. I mention that because at several points subsequently in my evidence on other matters I shall have to refer to the status of these schools, and to the possibilities of the work.

15690j I propose now to discuss instruction beyond the day school stage. Under that heading we have to consider, in the first place, part-time study, that is, facilities for the instruction of pupils or students who are able to give only part of their time to education. The Board issued a Memorandum on Courses of Work in Rural Evening Schools two years ago, and in that memorandum they drew attention to this particular part of their work, and in the forefront they mention this: "From the point of view here considered the population of any district, urban or rural, may be broadly classified in two divisions, namely (a) those whose circumstances justify a more or less extended period devoted to study, and (b) those whose position compels them to devote the whole of most working days to earning their livelihood, a class which, in rural districts, includes farm labourers, occupiers of holdings of less than 50 acres, village mechanics, small shopkeepers, working carters, etc. The educational requirements of members of the former class are to be met, and are already partly met, as regards preliminary training, by secondary schools and higher elementary schools, and, as regards further and technical training,

by farm schools, agricultural colleges, or by short courses in agriculture and horticulture. On the other hand, facilities for the further education of the less well-to-do members of the rural population have not reached a corresponding stage of development. In view of this fact and of the relatively large numerical proportion of such persons, it appears that in very many areas this matter is one to which careful attention should be given."

Then they proceed to discuss the difficulties of the case. These difficulties are, in the first place, that if he is to have a real appreciation even of the meaning and methods of the humblest of agricultural operations, it is most desirable, and in very many cases, necessary, that a man should have a good elementary education. That is, a good elementary education implying not merely an education in reading, writing and arithmetic; but such cultivation of the faculties as I have indicated is to be in the forefront of the aim of the public elementary schools in the rural districts. Now, in rural schools, apart from the fact that a full measure of success has not yet been attained in the adaptation of the curriculum, we have the further difficulty that pupils leave the school as a comparatively early age. There are many advantages in their leaving the school at an early age, but these advantages are accompanied by certain disadvantages. One of them is that the more ordinary matters of elementary education have not been made completely part of the equipment of the individual. Therefore the further training of these classes is a matter of the first importance. That further training takes two well-marked forms. I have indicated them in the heads of evidence under (a) "Short continuous courses of work, as in travelling dairy schools and winter schools for young farmers." I do not think I need say very much about that, because most of the members of the Committee will know already very likely what that means. But I simply mention that in the arrangements put forward in the Board's programme of work, and encouraged by the Board, there is provision for aid from the State to local authorities, who organise courses of the type indicated. Such courses are those provided by travelling dairy schools with a normal course of a couple of weeks, or in the humbler form of education, perhaps a one week's course. Again, in the winter school the winter course may be a ten weeks' course, or it might be only a four or six weeks' course, or it might be much longer.

Then under heading (b) there is reference to classes which meet regularly two or three times a week, generally in the evening, through a session, a session which in agricultural parts is generally coincident with the time of the year when there is less to do in the field. Now those courses are distinct from the others in the sense simply that there the attention is not so concentrated. There they are taking advantage of the odd time that people have throughout a portion of the year, as compared with the system of taking people away from their work for a short period, when arrangements can probably be made to meet their other requirements. It is under this second heading (b) that the work of continuing the incomplete general elementary education is carried out. Under that head we have classes where the bulk of the work is taken by the elementary school teacher, but that work is very often combined with special instruction given by teachers who are themselves engaged in some practical operation connected with agriculture. What the Board wish to see is that the agricultural bias, which is of the greatest possible value in teaching adults, should be imported into this class of work as fully as possible; that is, that all the work done should turn upon the method of teaching which is most likely to attract and continue to retain the attention of the pupil. In this Memorandum, of which copies have been handed round, there is reprinted an extract from the volume of syllabuses of the Board on pages 3, 4, 5 and 6, and that gives a general statement of the type of arrangement of work. I do not propose to go into that, but I would ask any member of the Committee who is not already familiar with the general idea of it just to look at these pages again. The outline of the matter is that we suggest a preparatory course in which, if it is a two nights' a week course one night should be devoted to reading, writing, composition, and so on, and the second night to woodwork, or other handicraft work, with drawing and mensuration, and in the summer months with gardening. As to the nature of the subject matter of instruction in reading, under the heading of "Matters of Rural Interest," it might include such things, as parish councils, parish meetings, co-operation, agricultural credit, and so on, and the work of the whole school should turn upon points of agricultural interest. Thus, whether under reading or arithmetic or composition, it is desired that as far as lies within the capacity of the

Mr. F. G.
Ogilvie, C.B.

19 Feb., 1908

15690j

15690k

15690l

15690m

Mr. F. G.
Ogilvie, C.B.

19 Feb., 1908

teacher—for that is really the only limit in the matter—the work should be technical; technical, that is, in the sense of being the development of the application of, say, composition to writing on a subject which has some bearing upon some agricultural operation, or if it is in arithmetic it should be the making out of accounts and setting them out neatly, and so on; and if it is in geography the geography should turn upon the district, and the means of communication by road or rail and post and on distances, times of transit, fares, routes, and so on. Those are subjects of instruction proper to geography, and are quite within the limits of the ordinary elementary teacher, if his attention is properly directed to the matter. It is in the proper direction of attention that the Board find they have been recently making considerable steps in advance, and it is to further steps to be taken in that direction that they look for the greatest improvement in this section of the work. Again, these two- or three-nights-a-week classes may be arranged for elementary or advanced instruction in special subjects for those who have previously completed a general education sufficient for their needs. That higher grade is possible so far as numbers of pupils are concerned, not in every small parish, but in centres which are accessible to a considerable agricultural population. Again, these weekly courses may include instruction in the meaning and method of a labourer's occupation, but, as I have mentioned already, instruction of that sort may be taken quite apart from the more common types of the class.

15690n Then I ought to say that the methods by which the grants of the Board are calculated are arranged upon a very elastic system, but that the elasticity is only being gradually appreciated by the local authorities, and it is only within the last year or two that the possibilities of working classes of this sort under the Board, and, therefore, of getting State aid for them, have been appreciated. Take this particular item. Supposing you want to have a class for labourers in hedge layering, or hedging generally, or anything in connection with woodman's work, it is possible there may not be anyone in the parish who can give instruction in that, not that there is nobody who knows how to do it, but that the people who know it are not the sort of people who are likely to be able to give instruction satisfactorily. If there were such a person in the parish he could be got to come up once a week and give instructions. If there is nobody of that sort in the parish then the local authority may arrange for some person to come and take pupils for a half of each day for a week or a fortnight for the particular branch of that particular kind of instruction at particular times. Instruction of that kind is quite as eligible for a grant under the Board as instruction in the more usual type of weekly evening lessons. Similarly, special sections of work may be dealt with in shorter courses, such as poultry-keeping, bee-keeping, and so on. Then there are other methods of work which do make for good agricultural education, but are not quite on such normal lines. In fact agricultural education, much more almost than other forms or sections of education, is capable of promotion otherwise than by instruction, and there have been until a couple of years ago some difficulties in the taking cognisance of methods of education other than formal class instruction; these difficulties, however, have now been so far got over, and the value of demonstration work—I mean demonstration of already ascertained facts as to manures, and conditions of culture, and so on, the value of demonstration plots for that, and the value, say, of demonstrations in connection with shows or with competitions in connection with shows—is recognised as being very considerable as an item contributing to the general education of the agricultural community. It is not formal instruction, but it is of an importance which is worth taking cognisance of, and which under certain conditions the Board do now take cognisance of.

15690o Then under the head (c) of the same part of the heads of evidence, I mention the training of teachers engaged in rural areas, that is, of those who are already teachers engaged as being in charge of schools, or giving instruction in schools in rural areas. The further training of these teachers with a view of their special work and special opportunities in rural areas is a matter that has been receiving much attention. The difficulty in locating much of the work to which I am now about to refer in the period of the training of the teacher before he enters upon his duties as a teacher is considerable. In the first place, teachers in training, or students in training colleges, do not know whether their field will be in the country or in the town, but many of them prefer to go to the town, and would not shut themselves out from the opportunities of promotion to the town. Others of them wish to keep their field for promotion as wide as possible, and

in any case it is not possible to earmark any large proportion at any rate of the future teachers for work in rural areas. This may be possible in the future. At the present moment it is not; and the fact remains that a great majority of teachers in rural schools have not had a training specially adapted to the requirements of the schools in their areas. Now it has been made possible for local education authorities to take steps to give supplemental training to such teachers. The Board has been in season, and, I might almost say, out of season, pressing upon local authorities this part of their duty as well as their opportunity, with the result that we have had a considerable number of excellent classes of instruction for teachers, in Saturday courses, where teachers come to a central place every Saturday for a spell of instruction, and in summer courses and vacation courses generally where they go for two or three or four weeks to some centre where a good course is arranged. This supplementary training of teachers has a very great influence upon the work of the teacher in his elementary school, and even a greater influence upon his work in connection with the evening school, because if once a teacher's interest is arrested by the subjects which are proper for special attention, in rural areas, he realises the advantage of the evening work from a point of view that had never occurred to him before.

The difficulty, however, at every point is the difficulty of teachers. That is the main difficulty. It is the difficulty with which the Science and Art Department, in this matter the predecessors of the Board of Education, struggled with but small effect for many years, and it is only since the Act of 1902 placed the whole of the education of the country upon a definite basis, as a network, that it has been possible to face this question. The training of the teacher implies that there is somebody to train him, and it has not been possible to make any very phenomenal advance in the matter of agricultural education in the section to which I have just been drawing attention, because you cannot train a teacher unless you have somebody who knows the kind of training that he requires, and who is capable of giving him that kind of training. It has, therefore, been necessary to take the greatest precaution to see that we should get the advantage of having in the various areas people who really have the right sense of what is required in this matter, and that these people should have opportunities of meeting and instructing teachers in matters which would give them a chance of really effecting their purpose.

15691. (By Mr. Medd.) Before you proceed further, may I draw attention to one point which I think has been omitted. Is it not the fact that teachers may now proceed for a third year's course of training to an agricultural or horticultural college?—Do you mean teachers in training at training colleges?

15692. No, I mean that teachers who are qualified acting teachers may now proceed for a third year's training to an agricultural or horticultural college?—Yes.

15693. You had not mentioned that?—No. The real difficulty is that we have already got a large stock of teachers who are likely to be with us for a generation, and the sooner we can get the existing teachers' qualifications extended in the direction that is desirable the better. The coming teachers are having their attention directed to this matter as they go on. I am not very hopeful that the provision to which you have directed attention is one that would be effective as regards a sufficient proportion of the future teachers to make it really a large step.

15694. No, but it refers to acting teachers, does it not?—Yes.

15695. And they are permitted, under the present regulations, to proceed to agricultural or horticultural colleges?—Yes, but my point is that though that is, no doubt, very good, yet, if a man is going to give up a year of further study to professional training, he will expect to get something better than an ordinary rural school. Now if the lower grade rural education is to be conducted properly, we must get the average man in the rural parish to be qualified to take the part that he must take in it. There are only certain things that would fall to the professional public elementary school teacher, but those things he ought to be able to do. The other matters would have to be dealt with by other people, and these other people have been extremely difficult to develop, even in urban centres where they are required for technical education other than agriculture. In rural districts it is still more difficult to get a man who is a practical man and also a good teacher, and that is why, in rural districts, it has so frequently been necessary for that provision to

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be made by securing a staff of instructors for specific things, who will give their whole time to instruction. The number of people who are really likely to be good instructors is comparatively small amongst those who are masters of the practical work which is the basis of the instruction. With reference to that special training of teachers, I will mention two things to indicate the kind of thing that is necessary. In the training colleges the Board of Education want to get the training of students made as good as it possibly can be made. Now in nature study, if the teachers there are well taught as to the methods of study and instruction, a great step will have been taken. Three or four years ago the Board arranged for a special course to be given by Professor Miall, who perhaps had given more attention to this matter than anybody else in Britain. He gave a special course of a month in South Kensington, to which the Board brought up a number of teachers in training colleges, that is, members of the staffs of training colleges, with a view to their being instructed by Professor Miall in the matter and as to the methods which, in his opinion, were most suitable for this work. Again, two years ago, with a view to encouraging a good type of teacher for agricultural subjects of a more advanced kind, the Board arranged with Mr. A. D. Hall to give a similar course upon the study of the soil, and to that course were brought up a large number of the most likely men, junior members of staffs of agricultural colleges, instructors in agriculture or those who were instructors in horticulture and teachers under County Councils, and so on—people who were likely to be conducting courses of a more advanced kind for the study in the study of the soil. They were brought up to that course. By methods such as those the Board are endeavouring—and it is an endeavour which will take some time to reach a quite satisfactory result—to improve the teaching supply in the country.

Next I will give a short statement about the local organisation for such work. There are two points I wish to make plain; the first is that, so far as part-time study is concerned, this is a period of transition. I have already referred to the fact that it is only within the last two or three years that we have got into a satisfactory system of distribution of the aid through the Board for part-time study. But, at the same time, we have drawn the attention of all concerned to the importance of courses of study with a suitable combination of subject matter as distinct from what used to be regarded as the essential basis of it, that is, the separate treatment of each subject. Now we have been doing what we can to replace the system of grants for separate subjects by a system based upon progressive courses of study, dealing with several related subjects. In urban areas courses in commercial work, or courses in engineering work, running into two to five years of part-time study, have been introduced very generally. Similarly, courses of work, including technical subjects, are being gradually established in agricultural areas in rural schools. This Memorandum gives an outline of the lower part of the work, especially because we have found that there was most need, really, to spread a knowledge of the kind of work that could be done there. The difficulty has not been merely that of spreading a real knowledge of this, but of securing attention to it, because the Board of Education themselves have been, as everyone knows, somewhat fully occupied with matters which did not relate to technical education since the Act of 1902 was passed, and the local education authorities, too, have had their attention not a little distracted by other matters. So that, altogether, it has been somewhat difficult to get a full measure of attention to this particular aspect of the work. But still there has been, as I have said, a very great improvement in that way. What has been recognised for a number of years is that the form of the teaching of the science of agriculture as a subject of more advanced study depends for its value upon the quality of the preparatory work, and in many schools now we find that a sufficient preparation is being afforded for the real teaching of agricultural science. The change in the attitude of the Board of Education in this matter is perhaps indicated as well by the position of the Board's examination in agriculture as by anything else. Some years ago the Board had prepared for it by a special committee a revised syllabus for an examination in agriculture. That is a syllabus which makes it clear that for scientific knowledge of agriculture to be obtained, there is required much systematic study, and the effect of the change thus introduced was, as it was intended to be, at once to cut off a great deal of the teaching which had been going on under the name of agriculture and which had really not been doing any good at all, or very little good. It made perfectly plain that what was required was worth attaining,

but that it could not be attained unless by prolonged systematic study upon an adequate basis. The syllabus shows that the examination is intended for those only whose training and whose capacity and whose opportunities justify them in expecting that they will attain such a knowledge of agriculture as that indicated. Examination in agriculture is no part of the programme of the Board for the practical farmer, unless it be for a man who is to go into farming on a considerable scale, a man whose work would then fall to be tested, not by a separate examination, but by the work that he did in a continuous course of training suitable in extent for the work that he was going to do.

The next point in the local organisation is that the Board have introduced in all their activities in technical education, first of all, in schools of art, and then in technical schools, then in all rural areas, the principle of recognising the work of an institution or an area as a whole. That is to say, in the school of art, instead of taking up the separate subjects, and pupils, and so on, as they did several years ago, they intend to measure the value of the educational work done by the school as a whole; and the grant depends upon that. Similarly, they have an alternative system for technical schools, the two systems going on alongside. Where one is more suitable, they take that one, and where the other is best, they take the other. Similarly, in rural areas, they have announced an article in one section of the Boards' regulations which deals with an alternative method of grant (that is Section 34) by which the work done in the area is taken as a whole. With reference to that work, which is a most important new departure—that is Section 34—I will read the paragraphs on page 4 in the Regulations for Technical Schools in the year before last. This is from the Regulations of the year 1906-7, at page 4: "In Section 34 of the new Regulations the Board have made provision for an alternative scheme of Grant for so much of the educational work of a Local Education Authority for any Administrative County other than London as falls within the scope of Chapter 2 of the Regulations. Owing in a large measure to the conditions under which Evening School Work and the lower and intermediate grades of technical instruction have been developed too little thought has been given to the correlation of the various existing forms of education of this type, and to the utilisation of the various activities and of the funds available for their provision and maintenance in the manner best suited to the areas which now form the educational unit. It thus too often happens that the further education in the evening schools of an area is seriously retarded owing to the fact that the provision made for it throughout the area has not been considered as a whole," and so on. I should perhaps refer to the succeeding regulations, those for 1907-8, of the present year that is, copies of which I have just circulated, and I refer to page xi. and page xii. of these, where there is a passage which deals with the same point. I think perhaps I may read through that, because it summarises the matter: "In circular 620"—copies of which have been circulated to the members of the Committee—"which was issued in July last (*i.e.*, July, 1906), to the Councils of Administrative Counties other than London, the Board gave details of the alternative conditions of grant announced in Section 34 of the Regulations. The provisions of that Section aim at encouraging efforts to meet the special difficulties of organisation inseparable from the work of technical education in rural districts. When the Local Taxation (Customs and Exercise) Act, 1890, placed at the disposal of County Councils funds which they might apply for purposes of technical instruction, many of them devoted ready attention to the needs of sections of the agricultural population, but few developed schemes which were both organised and complete. Moreover, much valuable instruction has been given under conditions somewhat different from those directly contemplated in previous issues of these regulations. The experience now gained by the operations of local authorities in this matter has established principles of general application as to the methods and matter of instruction most likely to prove effective, and the alternative conditions of grant should assist county councils in making provision for all the educational needs of their areas so far as these are within the province of Chapter 2 of the Regulations." That refers to education of the type I have been discussing. Then it goes on: "The Board recognise that in any scheme which is to be effective there must be considerable elasticity of method, and in awarding grants, they take account of the full measure of the educational value of the demonstration and practical work in rural schools is so often required as an essential extension of class instruction." I do not know that I need read the succeeding paragraph.

Mr. F. G. Ogilvie, C.B.

19 Feb., 1908

Mr. F. G.
Ogilvie, C.B.
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19 Feb., 1908
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It enters into detail in case that may be necessary. But perhaps I might refer to the middle of the next paragraph over the page, where it says: "Among the subjects of instruction may be named the continuation of elementary education and its direct application to the commercial side of rural industries; handicraft, and simple calculations of areas and quantities as for the garden, the field, and the market; conditions of life and growth of plants and animals; gardening; care of stock; dairying. In addition to the normal evening school conducted by a local teacher interested in rural affairs, the scheme of arrangement would include supplementary instruction by visiting special teachers, short courses by itinerant instructors, winter courses of some weeks for farmers' sons or daughters; and instruction given by means of demonstration plots, school gardens, and supervised work on the farm, and by competitions and demonstrations at agricultural shows." Then there is a note with reference to teachers. These, and the forms which have been sent round, will serve to indicate the lines upon which the Board has been pressing for further attention being given to this most important part of the work.

Shall I proceed with the full time instruction now, or is it convenient that I should complete my general statement.

15696a (By the Chairman.) Yes, proceed with the full time instruction, please.—As to the provision for full time instruction, there are two grades of instruction that require attention in practically all matters of technical education, including agricultural. These two grades, so far as they fall under the Regulations of the Board, are administered by the Branch for which I am responsible, under two Sections: one is Section 42 of the Regulations in your hands, that is on page 15, Day Technical Classes, where we have schools of lower grade than colleges. Section 42 says: "In special cases grants may be paid in respect of instruction of students in day technical classes, whether detached classes for advanced work or"—and this is more important—"grouped classes affording organised instruction in related subjects adapted to the technical requirements of students." Those classes may be for students of any stage of advancement. Under this section we treat a very great variety of things, each according to its own circumstances. We have classes for defective pupils, who are under instruction in various subjects; and we have classes for instruction having a bearing upon particular trades of women, for example such as upholstering or anything like that; and we have classes for the training of young women in domestic arts. Perhaps I may cite one *à propos* of your enquiry, the school at Worleston is an illustration of the work done for schools of a lower grade than colleges. Again at Wisley there is a school working under this section where practical work in horticulture is combined with instruction in the principles of science that underlie horticulture, with instruction in physics, chemistry, botany, mensuration, practical geometry and field geometry, and that sort of thing. But there is no general requirement under the Section as to the standard of attainment that students or pupils must have before they enter such a school. Each school fixes its own standard. The one at Worleston has its own standard. One for young girls or young lads doing some lower work would have a lower standard.

15696b The main provision under the Board for higher technical instruction is taken under the preceding sections of Chapter 3. Chapter 3 is mainly concerned with technical institutions. A "Technical Institution" is an institution which gives an organised course of instruction in day classes, including advanced instruction in science or in science and art. That is set out in Section 35. We require before recognising any place as a technical institution that it should provide at least a two years' course. Most of them provide a three years' course, and many of them a four years' course of instruction; and it is provided that the standard of a pupil's education should be such as they may be expected to attain after a fair secondary school education. The normal standard is for a pupil over 16 years of age and qualified by general education to profit by a course of advanced instruction. For the present (and this applies to but very few cases now), pupils may be taken in under 16 if the inspector is satisfied as to their power of following the work. The position of a technical institution in the scheme of the Board is that practically of the highest institution in respect of Government grants through the Board in respect of its technical work. The maximum grants are £10 in respect of each student who gives full attendance during the first year, £12 for a second year, £15 for a third year, and £15 for a fourth year; so that where an institution is doing good work and has a fair attendance of students, its income

from grants is really very considerable. We find that in the case of technical institutions, very great attention requires to be paid to the type of institution that is recognised, and I think perhaps it would save time if instead of talking generally on that point, I should make it pointed, and consider agricultural institutes. Agricultural institutes provide whole time instruction for students who are beyond school age, and who have completed something like a secondary school education up to at least 16 years of age, and perhaps 17. What we find is this—I mean what we find generally, and what we know from observation elsewhere, as well as in England—that no system of provision of schools and colleges of this type can be satisfactory unless it is based upon a clear conception of the requirements of the case. The essential difference of programme and of methods between different institutions depends upon such things as the previous education of the students, the period of the courses, and the final occupations which the pupils have in view. For instance, we have many good examples now in England of institutions of the type of university colleges or their equivalent, giving, say, a three years' course, or a four years' course even, corresponding to the best type of technical institution related to other industries—a course of instruction extending over three or four years—based upon full instruction for the work, and including the application of science to the essential parts of agricultural practice. That is one type of course—a course which includes a considerable proportion of science. Where, on the other hand, you have only to work towards a two years' course, as for a farmer's son, who has had a fair secondary education with some agricultural experience and who is going to take to work on a farm, the proportion of the different studies is necessarily different. The type of curriculum of that school is not the same as the type in the other. It is not good enough for a man to take two years of a four years' course and imagine he has made a half progress towards the end of that four years' course. Still more different is the case of an institution which has to make the best of a one year course. That is, there are people occupied with rural interests for whom one year may do a great deal—that is, one year of continuous consecutive study. But if it is to be only one year's study it should be definitely one year's study, and the whole curriculum must be prescribed upon that basis; and, not only so, but the institution in each case must be definitely related to the schools by which it is to be fed. If it is to be fed from a particular group of schools, and schools of a particular area, then there must be some direct and secure means of seeing that the preparation of the students in those other schools of the area is just what is necessary for the work that is to be done.

To such points as those we have been giving great attention in sections of technical instruction which have been entirely under the charge of the Board of Education, and the development of the technical institution has been most carefully watched. We have done our best to prevent an undue multiplication of institutions with ill-defined aims, and we feel satisfied now that the result is going to be much better than if we had allowed these institutions a very free hand in development in the first instance. Certain agricultural colleges are dealt with under this head. One I may mention here is the Harris Institute, Preston. That is an institution to which the Board have made grants for a considerable time, and it is an example of an institution which is also now in receipt of a grant from the Board of Agriculture, and is therefore an illustration of a difficulty which has arisen in the allocation of national aid by the two Boards in a field within which it is difficult to allocate the interests. In the Swanley Horticultural College we have a corresponding course in horticulture—a course, that is, of three or four years, where in the normal three years you get good work done on a scientific basis and adequate for the purpose in view. In the Harris Institute we have had some difficulty in determining the precise natural limits of work for which the Board of Education grants and the Board of Agriculture grants respectively should be regarded as allocated. The difficulty in an institution of that sort is considerable. In the Harris Institute not only do you have common teachers, that is to say certain members of the staff giving instruction to students who are agricultural students, and to students who are in another part of the institution, technical students, that is (because there are other departments of technical work besides agriculture in the Harris Institute), but we have also teachers giving part of their time to agricultural courses and part of their time to other advanced technical courses. We have classes, say, in mathematics, or mensuration classes in which certain pupils belong to the agriculture group, and certain pupils belong to other technical

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groups. Then again, we have the difficulty that one of those classes must be inspected and examined for purposes of general technical education, and at the same time obviously in the instruction of those subjects, whether it be chemistry, or mechanics, or mathematics, that is given as preliminary scientific work, the agricultural student has to be seen by the same examiner. Finally we have the difficulty that where an institution is a complex one, like the Harris Institute, it is very difficult to get at a precise statement of how the money which goes into the institution for different purposes is spent. Where you have a complex institution, you really can only treat it as a single unit for the purposes of finance. That is an indication of one point on which you have a difficulty combined with an economy in the co-ordination of different sections of education.

15696e In the next paragraph of the heads of my evidence I have drawn attention to two or three points in which the co-ordination of agricultural education is notable. For instance, I have already referred to the cultivation of the aspects of secondary and of elementary education which bear more particularly on this question in rural areas. I speak of the utilisation of the services of a visiting teacher in horticulture for day school gardens and evening school classes in gardening. That is, if you have a man on the ground to give instruction to the day school, the cost of the instruction provided for an evening school is really less if you use that man. It is economical to combine day and evening provision for specialised instruction. Again, there is the utilisation of the services of the local public elementary school teachers for the work of evening schools in conjunction with the special expert teachers for agricultural instruction. I have referred to that, and I mention it here simply to draw attention to the means of facilitating co-ordination by having the same local officers in charge of the work in the different departments. Again, there are the facilities for improving the qualifications and extending the interests of teachers. Where you have the public elementary teacher the servant of the authority for both purposes you are more likely to have that authority, being responsible for both purposes, taking steps to improve the teachers' qualifications. I have already, I think, gone into detail and need not go into further detail about the courses.

Then the use of buildings is found to be a very great difficulty. One sees that in other parts of the world not very far off. Where you have different school authorities dealing with different sections of education, you have often very great difficulty indeed in getting the use of buildings which have been provided by public money for various functions of education that are of importance in the area in question. I do not think I need dwell upon that.

15697. (*By Mr. Latham.*) Are you speaking of night schools?—Day and night schools.

15698. But you can always have the elementary schools at night?—Yes, we can.

15698a One has only got to look to the other side of St. George's Channel, where you find the difficulty arising because of the different Boards and separate national boards. The National Board of Education has charge of the elementary schools, and the Department of Agriculture and Technical Instruction has charge of agricultural and technical instruction. There is very great difficulty in getting the use of schools, not merely because of the central boards being different, but because the local management is different. Where you have the whole management interested in both sections of education, artificial difficulties never arise, and natural difficulties are more easily overcome. That is the point I wish to make on this matter.

15698b Again, there is the supervision by the County Education Authority, which is of great advantage in keeping these things together. Then where you can have several advanced schools in one institution you can very often get an economical use of the teachers, whose time each separate section of the institution could not afford to employ; but having the sections together, they can employ the full time of such men. The utilisation of the colleges as central institutions is a special case of advantage in this co-ordination question. I need hardly dwell, I suppose, upon the importance of the college being regarded as a central institution, for I understand that in your enquiry you have dealt with the matter. Obviously in the first place it is of the greatest advantage to the college, because it keeps the college staff in touch with people who are at work throughout the area where the college is planted, and therefore it keeps the area informed as to the fact that there is a college, and that there is somebody going about who is always in a position to give information as to steps to be taken towards further education on various points. That

the college may be a real centre of information, it must be an essential part of a general scheme so that the staff may radiate from the college, and that thus the occasional courses may be superintended, or there may be superintendence of demonstration plots or advising local managers, or whatever it may be. The college is the centre from which a great part of the pioneer work ought to come. It is possible to use a college in that way, though it is not part of an organisation, but the possibility becomes a fact when the college is worked in as a section of the organisation. I do not think we need go further than look at the work which has been possible in Scotland, where the whole of the organisation has been under the same department—the work which has been done in Scotland since the agricultural colleges in Scotland have been transferred to the department which has been responsible for all the other education of the country. The Scottish agricultural colleges (there are three of them) have been developed in full and proper relation to the work required in their separate areas. I do not know whether you have had any evidence from Scotland as to the importance of this matter, but if so, I need not refer to it.

15699. (*By the Chairman.*) Scotland is out of our purview, but you are justified in mentioning it, of course?—Perhaps I ought to say first, that I have been five years now with the Board of Education. Previous to that my work was in Scotland, and, as it happened, I took a considerable part in the development of agricultural education in Scotland, and therefore I am speaking simply now as one who knew what the work was up to five years ago from being personally very much concerned in that work, and I may say, further, that I have kept myself informed of the work that has been done there since. I should say that the greatest possible advance has been made in agricultural education in Scotland not only since, but as a result of, the transfer of the agricultural colleges in Scotland to the Scotch Education Department; not because that Department was better qualified to manage those colleges, but that the Scotch Education Department was in a position to work in the case of the colleges there in the best manner possible, not only with the institutions which had to work below them, but with the institutions that had to work alongside of them. It has been possible to make the colleges part of the web of educational work, and that influence has been of the greatest possible value in organising agricultural education in each of the areas, and in bringing the colleges into the fullest and closest relation with all other agencies at work in the direction in which the colleges are there to work.

15700. (*By Lord Belper.*) You mentioned Ireland just now and the success attained there, and can you point out how that is an argument in favour of your view?—Because in Ireland you have the whole of the technical work under one department, the Department of Agriculture and Technical Instruction. The difficulties that there are in Ireland arise entirely, so far as education is concerned, because of the fact that the secondary schools and the elementary schools are under other departments. The work of the agricultural department, like the work of the technical side of the same department, is hampered by the separate control and the separate local management of the other sections of schools.

15701. In Ireland the work is under an agricultural head and not an educational head?—The department of agriculture and technical instruction is in Ireland a joint department which is under one head—one Parliamentary head and one secretary.

15702. Not under the Board of Education?—There is no Board of Education.

15703. But there is some control of elementary education there?—It is the weakest point in the agricultural education of Ireland that it has not got any direct connection with either the elementary system or the secondary system, and that weakness is appreciated very fully by the various officers who have to deal with agricultural education in Ireland. The strength of the Department is that it is fully in touch with all sections of agricultural education and with all sections of technical education. It is worked on parallel lines with technical education. The technical institution and the agricultural institution work into one another, but these institutions are not and cannot readily be brought into working correlation with elementary and secondary schools. In Scotland there is an absence of these difficulties.

15704. (*By Mr. Medd.*) But you do not advocate technical instruction in elementary and secondary schools. do you?—I do not advocate agricultural instruction in

Mr. F. G. Ogilvie, C.B.

19 Feb., 1908

Mr. F. G.
Ogilvie, C.B.
—
19 Feb., 1908
—

elementary and secondary schools. But I must make myself clear on that. I do not advocate technical instruction, nor do I advocate agricultural instruction in elementary or secondary schools, but I do advocate that the agricultural and the technical aspects of education should be kept fully in view of every elementary school and of every secondary school.

15705. Then the distinction to which Lord Belper drew attention does not affect your opinion really. Lord Belper pointed out that the Department of Agriculture and Technical Instruction had full control over agricultural education in Ireland, and you complained that the difficulty arose in England because there was a sort of joint control, whereas, if there is to be no technical instruction in the elementary and secondary schools the difficulty need not and does not arise?—I am afraid I do not quite understand the question.

15706a (By the Chairman.) Perhaps you had better go on with your evidence?—The next point is the local government of education. The Local Education Authority is the recognised unit for the local control of education. It has its finger in all educational activities which must be brought to bear upon the problem of affording suitable education to the community. If agricultural education is to become an object of national care—and everyone accepts that—it must be brought into the closest possible relation to the several aspects of national education. It must be developed on a basis which is capable of national application, and it must be developed as an essential element of a national system. The Local Education Authority has been established with a view of controlling and correlating all local education. The importance of its having direct relation with all education in that way is very obvious, and I do not think I need go into that unless there is anyone who wishes to ask me questions about it.

15706b Then one other matter is the constitution of committees. It has been said, and I have no doubt this Committee has had evidence before it to the effect, that a local education authority has too much to do, and that an agricultural committee charged with the duties of looking after all agricultural interests and education would be much better for that part of the work. Now, everyone will agree that it is most desirable, in developing agricultural interest in education, to have the continued attention of people interested in agriculture. But if these men in any area are segregated the work of general education, in which the agricultural interest in such an area as we are contemplating is of the utmost importance, is apt to suffer very seriously from the lack of continued attention on the part of those who are specially qualified to watch and to do good in the direction of that interest. To cut out the agricultural interests in any way (of course, it would not be an intentional cutting out, but it would be a very effective cutting out) from the region of general and secondary education in the rural community would, I consider, be a matter of the gravest misfortune.

15706c Then with regard to local finance. In finance we have to note the fact that rates are separate so far as elementary and higher education are concerned, and this separation of elementary from higher education in rating masks to some extent the unity of educational work. Of course, there are obvious reasons why they should be separate so long as one is compulsory and the other purely optional. That alone is a reason, but so far it is a misfortune from the point of view of appreciation of the relation of the different sections of education to one another; and really much of the education which is called higher in rural areas is in essence elementary. It is completing the work which the elementary schools are supposed to have done, but from various circumstances do not do; but it completes the work under conditions which make the methods, &c., and the matter of instruction, somewhat different. Besides the rates, the other funds available are those from the Exchequer Grant in Aid of Local Burdens, which is part of the common fund for the development of higher education, and which has to be applied in common with the rates for the general improvement of educational work.

Now the question of finance is always a difficult one, and the difficulty is very much increased where the people who have to allocate the fund are not interested, and interested with some personal familiarity, in all sections of the work to which they are called upon to allocate the money. The singleness of the aim of the system is one which ought to be clearly and plainly recognised by all concerned in the administration of the funds.

I have some other notes, but perhaps it would be better

now if members of the Committee would indicate any point upon which they desire any further information.

15707. I am sure the Committee have listened with the greatest interest to the very clear and exhaustive statement which you have made with regard to the steps to be taken towards the development of this problem of agricultural education. Now with regard to elementary and secondary general education, I do not propose to ask any questions except with regard to the training of the teachers for rural districts. You have pointed out to the Committee the difficulty found in obtaining those teachers in rural districts, and you have pointed out that as the teacher in the initiatory stages of his training does not wish to decide whether he will take up tuition in a town or in a rural district, therefore all that can be done is after he has been appointed to a rural school, to give him the opportunities of further training, so that he may have that special training which every teacher in a rural district requires. Now what I want to ask is whether any steps have been taken to encourage in the preliminary stages of training a certain number of scholars to enter for the special training adapted to rural districts?—The extent to which that can be done depends so largely upon the feelings of the local education authorities who are responsible for the training of the teachers that the Board of Education are able to influence it only indirectly. The way in which their interest tells most fully is by the importance they attach to those subjects in the training of teachers in training colleges which have a bearing upon it, such as nature study work, drawing, manual training and so on, and where they encourage training college instructors in those subjects to make the most they can of the teachers who show ability in that direction. The people who have taste in that direction are those who are most likely to be good teachers for rural areas. It is extremely difficult in the two years training of teachers, who have a good deal of work to do to get their general education up to the standard, to specialise them at that stage. Specialisation can only take the form of encouraging very good work in those teachers who show capacity for good work in their particular sections of their training that bear specially upon the rural interests.

15708. I gather from your evidence that you rather prefer the Scotch system, which has brought all these institutions under one department?—Yes.

15709. It is your opinion—whatever may be the opinion of the Board of Education—that it should be under one head. Your whole evidence clearly tends in that direction?—Yes, I am clearly of that opinion.

15710. Now you will admit we have to deal with a situation in which these higher agricultural institutions in England are under the Board of Agriculture, so that you do not, I suppose, advocate that they should be removed from the control of the Board of Agriculture and brought under the control of the Board of Education?—It might be the simplest solution now if that were done. I am not prepared to say that it would not.

15711. On the other hand, you are not in favour obviously of a dual control of those institutions?—No.

15712. You are not in favour of inspection by both Boards and of grants by both Boards to the same institution?—No; I think the duplication of grants and of inspection is unfortunate.

15713. Now, will you allow me to ask, if we are to draw the line anywhere, whether you do not think that the line should be drawn so that in any case where technical agricultural education is given quite apart from general education, it should not be within the province of the Board of Education to supervise it and to give grants, but within that of the Board of Agriculture?—Of course the difficulty is that it is so hard to say what is meant by technical agricultural work. I should prefer to see the work adjusted upon a general basis. You will gather from what I have said that in no other section of technical instruction does any Board other than the Board of Education deal with local authorities or managers of institutions in matters of education in relation to Government grants. The Board of Trade, for instance, does not supervise the commercial training of students. The Home Office does not supervise the instruction, or pay grants for the instruction of miners, or anything like that. But agriculture, I recognise at once, is treated somewhat specially amongst the industries in the British system. We have, and for obvious reasons, a Board of Agriculture which has got functions with reference to the industry of agriculture quite different from any function performed by a Government Board to any other industry in the country, and what I feel is this as to the industry: the preparation of

men to hold office in the industry, to perform work of any type for any grade in the industry, is a function of education, and if that preparation is to be provided in a teaching institution, then I think that that teaching institution ought to fall within the field of work proper to the Board of Education, just as the teaching institution for men engaged in engineering work or for commercial work does. The difference, however, between agriculture and, say, engineering, is that formal education in engineering has to be supplemented by an informal education in some institution conducted on a commercial basis; that is, that a man, after he has been in a college, or between times of college instruction, goes to work in a factory or in an engine shop, and so he is working in a business which is conducted for a profit and under conditions necessary to secure profit. The State does not give any assistance to the maintenance of institutions of that sort for the education of engineers' men in the duties of engineering, but in agriculture at the present moment the State does give that assistance in the case of farms—that is, farms where students may get experience in connection with work of an agricultural type conducted for profit and on a commercial scale. I certainly think that that is a special function that the State has undertaken, and as it is a special function it might perfectly well be, and more properly, perhaps, discharged through the special Board that attends to that industry. Otherwise I think that the work of education should be a part of the Board of Education's duty, of the Board set aside for educational purposes.

15714. I suppose you are aware that in most countries there is a Board of Agriculture, or Ministry of Agriculture, and that the Ministry of Agriculture deals with agricultural education?—Yes, but in most countries the organization of the educational work is very different from what it is here. The organization in England differs from that, we will say, in France in that the whole organization is a State organization in France, and in England a very large share indeed is a matter of local control; and the policy of England in this matter has been to develop the fullest possible measure of responsibility in connection with local bodies. That responsibility, as I have endeavoured to indicate, has of necessity done a very great deal to knit together the educational functions into a certain unity. Taking France, for example: in France, as we know, within the last few years there has been very great difficulty because of the Department which corresponds to the Board of Trade here having had supervision over certain sections of educational work, and the recent movement in France is in the direction of transferring from the Board of Trade and the Board of Agriculture all the educational functions which have been remitted to them. That is in France, moreover, where there is no difficulty about local control, and where the State runs the whole thing practically.

15715. Now let me ask you with regard to some of the institutions where overlapping occurs. Grants are made by the Board of Education and by the Board of Agriculture to the Cumberland and Westmorland Farm School, to the Basing Farm School, to the Eastern Counties Dairy Institution and to the Chelmsford Technical Laboratories. In those schools that I have mentioned the condition is not fulfilled which you impose for a grant, namely, that at least a two years' systematic course must be provided before a technical institution is eligible for a grant by the Board of Education?—In which school, might I ask?

15716. I have mentioned the Cumberland and Westmorland Farm School, the Basing Farm School, the Eastern Counties Dairy Institute and the Chelmsford Technical Laboratories?—The Harris Institute is the only one that is recognised under the category you have mentioned for grants.

15717. Under what category do the other schools come?—Those come under either Section 42 of the lower grade work or the Chapter 2 grants, which are substantially instruction given to people whose main occupation is something else than study.

15718. Now you will admit that schools of that nature (the Harris Institute, as you have pointed out, is of a complex character, and therefore I do not mention it) are distinctly technical agricultural schools, and does it not seem desirable, as long as the Board of Agriculture has control of the funds, that these schools should be under the absolute control of the Board of Agriculture and that the Board of Agriculture should administer the grants?—If these schools are under the Board of Agriculture, certainly; but the difficulty is that they are not. Taking the Eastern Counties Dairy Institute, the work on which we pay grants there is this sort of work—the butter and cheese school attended by students taking courses of work ranging over two weeks

to three months. These are all absolutely pupils under Chapter 2 of our regulations, and therefore there is a definite range of grant. In the case of the travelling dairy schools there is a 10 days' course, in which short local courses are similarly arranged in poultry keeping. The grant we paid to that institution last year in respect of these courses was £69—in 1906-7. That is for courses they had taken in that way. That is work not at all of the university college standard or advanced agricultural college work.

15719. Then your point is that all work which is not of university standard or agricultural college standard should be left to the Board of Education?—Yes, certainly.

15720. That is your contention?—I have no hesitation in saying that. There is no difficulty whatever about that. In fact, to take that work anywhere else, or to give national aid to that work, through anything else than the Board of Education, is to upset the whole system which has been carefully established by the Act of 1902. I quite admit that, if the Government in England were to take a paternal method, the bureaucratic method of giving a department, say the Board of Agriculture or the Board of Education, or a man, the power to establish schools for agriculture, such department or man would make a difference in 12 months that the existing system would not make in five years, but the permanent and ultimate effect would be much less. The method that has been adopted of developing public life in England is such that it aims at producing a fuller result by a longer time in education public opinion. Local methods are an essential element in that development, and that is correlated by the attitude of the Board of Education towards all that work.

15721. Therefore you assign to the Board of Agriculture only colleges—colleges like Aberystwyth College, and what we may call the higher colleges?—I do not say I assign those to the Board of Agriculture. I put it that those are required to be considered on a different basis from these others we are talking of.

15722. But I want to know where you draw the line?—I suggest that all these institutions, in so far as they receive grants in respect of education, ought to receive those grants through the Board of Education. I suggest that as to all these institutions, in so far as they receive grants in respect of giving special assistance to agricultural industries, whether by investigation or by affording facilities for work upon a commercial scale, or consultative work upon diseases or upon methods of cultivation, or anything of that sort, there the grant should go through the Board of Agriculture, but that all educational grants should go through the Board of Education. That is my personal view.

15723. That is what I wanted to know. Is your relation to these institutions confined, may I ask, to inspection or does the Board of Education guide the institutions in relation to agriculture; does it make suggestions with regard to courses of instruction?—The Board of Education is in this matter in a transitional period. Up to a few years ago the methods which were adopted did not succeed in doing much to develop this kind of work. The work is now being developed very rapidly. The Board has made such additions to its staff and is prepared to make such additions to its staff as are necessary to secure that all the work for which it is responsible shall be properly supervised. At the present moment we do advise and criticise every institution that is receiving aid from us, and we should not be performing our function properly if we did not do so. We should not secure proper expenditure of public money if we were not taking steps to exercise such supervision.

15724. Since when did the Board of Education begin to aid institutions giving technical instruction in agriculture?—It has been supposed to be doing it for 50 years through the Science and Art Department, but since when it has been giving effective aid is quite another affair.

15725. I am alluding, of course, to the grants to agricultural institutions, not to classes under the Science and Art Department?—It was only by grants to the classes under the Science and Art Department that the Government gave aid at that time. Take the Harris Institute, Preston. It received grants for classes under the Science and Art Department, classes in chemistry, classes in mechanics and classes in agriculture—and the school authorities piece these classes together to make the best sort of courses for which they could get aid, and it has happened that there has been a gradual development of the methods of the institution while the methods of awarding grants have perhaps only been slowly developed correspondingly. That is how it is.

Mr. F. G. Ogilvie, C.B.

19 Feb., 1908

Mr. F. G.
Ogilvie, C.B.
—
19 Feb., 1908
—

15726. Then before the grants were made, did the Board of Education institute an inquiry into the circumstances of each institution?—Yes. An institution makes an application to the Board of Education and states certain facts, and the Board consider whether they will recognise it as eligible for grants.

15727. Did the Board of Education consult the Board of Agriculture before giving grants to these institutions in the cases where they were aided by the Board of Agriculture?—I do not think we have given aid to these institutions—that we have begun to give aid to the institutions that were previously aided by the Board of Agriculture—without having such knowledge as the Board of Agriculture could give us. But we wrote to the Board of Agriculture and they pointed out to us that they gave a full account of their grants in the annual reports. I do not think in any of these institutions you have named we have begun to give grants under the circumstances you suggest.

15728. Then you admit that as regards practical agricultural education the active interest and the co-operation of the farmers should be obtained?—Absolutely.

15729. Has the Board of Education any machinery to secure that co-operation?—Precisely the same machinery that they use to elicit the co-operation of other members of the community in work in which their interests are involved. The Board work through the local authority. They act upon the local authority by inspectors of all types and by correspondence. They direct attention to the sections of work which require development and direct attention to the methods by which that development may in the opinion of the Board be most readily secured. The greatest prominence has been given in the last four or five years to the question of co-operation of employers. It has become almost fetish and has been doing a great deal of good. The attention that has been directed to the co-operation of employers has now spread into and has developed a most active influence in all the urban centres, and in the rural centres it is secured through the fact that the great majority of the local authorities are themselves engaged in agricultural operations.

15730. But have the Board of Education their own staff of inspectors—gentlemen trained at the agricultural colleges or the institutions with a special training for this purpose of inspection of agricultural classes and schools?—For the inspection of agricultural classes in rural areas we have several inspectors who are eminently qualified. For the inspection of agricultural colleges we have one inspector, but we have no work for him because, of course, we have no agricultural colleges with the exception of the Harris Institute and the one at Swanley.

15731. Now you mention in your statement travelling dairy schools and winter schools for young farmers. For inspecting these institutions have you got a skilled personnel which has special knowledge for dealing with such institutions?—Previous to last year there was but very little work of that type under the cognisance of the Board. Last year marked its beginnings. This year shows a very considerable increase in this work. The Board in certain areas have people who are qualified to direct attention to the weaknesses of the system employed in those particular classes and subjects, and they follow and will follow in this, as in everything else, the general principle that where expert inspection is required, if the staff does not include experts, experts will be employed. It is a regular part of the business of the Board to employ outside experts for any technical work in which inspection becomes necessary.

15732. Then in regard to these very special institutions like travelling dairy schools and winter schools, you are not prepared to admit that they would properly be under the control of the Board of Agriculture?—No.

15733. And you contemplate a further extension of the work?—I more than contemplate it. I say the extension is proceeding daily. Now that local authorities are alive to the position in which they may put things in relation to their work they are extending the field and volume of their operations daily.

15734. With regard to the work done at the various universities in their agricultural departments, what is their relation to the Board of Education? They get a Treasury grant?—Yes. It is given to the institution. The Treasury grant is given by the Treasury upon a report by an advisory committee. As to the expenditure of moneys all returns bearing upon or required for the consideration of university college grants are made to the Board of Education, and the Board of Education make the inquiries and provide some of the information necessary for the advisory committee.

15735. The committee which the Treasury consults is a committee appointed by the Treasury?—It is a committee appointed by the Treasury, but all the particulars as to finance which that committee requires to consider in advising the Treasury are provided or secured and systematised by the Board of Education.

15736. Do you mean to say that that Committee appointed by the Treasury sends its report to the Board of Education?—No; the Committee, before reporting to the Treasury, has to consider many things, one of which is the financial position and the statement of accounts and returns as to students, as to courses and subjects, and so on, in each year made by each college. Those returns are all supplied by the colleges to the Board of Education. The Board of Education puts them together, summarises them and inquires into them and presents for the consideration of the Advisory Committee a volume each year giving all these particulars for the year. The Advisory Committee has before it that information and also a report upon the work of each university college by inspectors appointed specially for the purpose every five years.

15737. Therefore the Treasury gets the report from this Committee, and also a report from you of the returns which you receive every year from these colleges?—Yes, the Treasury does, but the Committee, in making its report, has before it the annual returns provided by the Board of Education.

15738. That does include the agricultural department of the University of Cambridge, for instance?—No; Cambridge is not one of the university colleges.

15739. That is what I mean. Therefore you have no dealings with the older universities?—With all the universities, that is, all except Oxford and Cambridge.

15740. (*By Lord Barnard.*) In order to get it on the notes: you have referred to the department for which you are responsible, but I do not think, if I remember right, you told the Committee what that department was?—I am Principal Assistant Secretary for Technology and Higher Education in Science and Art under the Board of Education.

15741. You have also referred several times to rural schools in rural areas. I do not suppose the Board has ever been able to define a rural area or a rural school?—The definition would have to be a quantitative one, and it is a matter of considerable interest to attain something like a really quantitative measure of what one might call the rurality of an area. It varies so very much. It depends partly upon the distribution of the population.

15742. It is very vague?—Yes.

15743. The Chairman has already asked you some questions as to whether there are in your department any officials specially in touch with the agriculture of the community, and who are specially acquainted with the needs and businesses, I might say, which relate to the practice of agriculture?—Yes.

15744. But I rather gathered, though I was not quite certain, that you were not absolutely in touch with agriculture?—The Board has on its staff at the present moment one inspector appointed specially for service in relation to agricultural education, and that inspector does duty in various parts of the country. Besides that, amongst the many inspectors of the Board there are not a few who have considerable qualifications in one section or another of agricultural education, although they are not regarded as specialists. But then, besides that, again the Board does for special purposes in agriculture and in other things employ special outside men wherever they find it necessary.

15745. You are no doubt aware of the very great difficulty which has been experienced in the history of this question in acquiring the confidence of the practical agriculturist?—Yes.

15746. Then I take it from the very decided opinion which you have expressed that you are also of opinion that your department would obtain that confidence?—Well, that is rather a large order. I do not know that any Government Department ever did obtain the complete confidence of the community which it served, but I have not the slightest hesitation in expressing confidence in the belief that our Department will secure the confidence of those interested in agriculture in the administration of the work under its charge. I mean to say that the Department must. That is the long and the short of it.

15747. But what I want to put before you is this. Personally I have practical knowledge of the fact of the very great difficulty there is in securing the confidence of the farming classes, and to persuade them that by instruc-

tion you can teach them anything? You are aware of that difficulty?—Yes; and, more than that, I believe that it is not merely a difficulty of belief, but I believe that it is a difficulty of fact that by formal instruction there are many matters which cannot be communicated to an agricultural community. Many of the methods of improvement of their ability in their ordinary work must be communicated, not by formal instruction; and the difficulty of the want of belief to which you refer arises from what I certainly admit to have been mistaken methods employed by those engaged in what was called agricultural education in the past.

15748. You referred to the fact just now that for some fifty years, I think it was?—For a long time back.

15749. That at any rate for a great many years the Board of Education had been making efforts, or, rather, the Board of Education and their predecessors, had been making efforts to improve agricultural education?—Yes; to my knowledge for 40 years.

15750. Is it not the fact that it has been found out in some instances that the results of those efforts, in so far as the South Kensington classes were concerned, were not entirely satisfactory?—I quite agree.

15751. Then you have also no doubt got in your mind Sub-Section 2 of Section 2 of the Act establishing the Board of Agriculture?—Yes.

15752. Under that Act Parliament deliberately conferred upon that Board certain duties, such as the collection and preparation of statistics relating to agriculture and forestry, and it conferred upon them the power to undertake the inspection of and report on schools, not being public elementary schools, in which instruction in these subjects was going on, and the aiding of any school which admitted of that instruction? Are you aware of that?—Yes, I am.

15753. So that what I should like to ask you is, am I right in assuming that, in your opinion, that section of the Act of Parliament has made a great improvement?—No. I would direct your attention to the Board of Education Act of 1899, of which Section 2 is: "It shall be lawful for Her Majesty in Council from time to time by Order to transfer to or make exercisable by the Board of Education any of the powers of the Charity Commissioners or of the Board of Agriculture in matters appearing to Her Majesty to relate to education, and the Order may make such provision as appears necessary by applying to the exercise of those powers by the Board of Education the enactments relating to the Charity Commissioners or to the Board of Education." In my opinion, the time has now come in which the transference which Parliament in 1899 foreshadowed might take place.

15754. As a matter of fact, Parliament did very soon act upon the first part of those powers in regard to the Charity Commissioners—in the following year?—Yes, because there was no difficulty.

15755. How do you mean there was no difficulty?—Because the Charity Commissioners' work could be transferred as a whole, and with the staff which it employed.

15756. Pardon me for correcting you for one moment. I was employed on the Charity Commission for ten years, and I know there was considerable difficulty?—I ought to say no outside difficulty.

15757. You said there was no difficulty?—I meant no difficulty in connection with the local administration of it, because that is where the difficulty arises. In the case of agricultural education from 1899 onwards, it was prominent in everybody's mind that from that date a general re-arrangement of educational administration was taking place. That change took place gradually, and it was most undesirable to upset things during a transition period until the difficulties had so far cleared themselves.

15758. I should like very much to ask you, then, whether it is your suggestion that the whole of the powers of the Board of Agriculture should be transferred to the Board of Education under this Sub-Section for the collection and preparation of statistics relating to agriculture and forestry.—No, only those relating to education, and so far as they relate to education.

15759. Then Sub-Section 3 of the same Section is that the Board of Agriculture may make or aid in making inquiries, experiments and research, and collect, or aid in collecting, such information?—I think that that ought to remain with the Board of Agriculture.

15760. But those duties very much overlap at the present time, and you would still have a certain amount of overlapping?—I do not think so with those.

15761. Then am I also right in thinking that, in your opinion, there should be no dual control whatever, and that consequently the result would be that, so far as agricultural education is concerned, the Board of Agriculture would have no right to take any part whatever in it, except in the Houses of Parliament?—Yes, no right except the right which one Government Department has to approach another Government Department in anything that concerns it. It would be in precisely the same position with reference to agricultural education that the Home Office is with respect to the education of miners.

15762. But I think you yourself told us that agriculture is treated, on account of various circumstances with which we need not concern ourselves now, as being on an entirely different footing from mining or shipbuilding or the textile industries?—As an industry, yes.

15763. That may account for the fact that the Board of Agriculture has far greater powers and duties than the other departments concerned with mining and shipbuilding, say?—Certainly, that is so in regard to agriculture as an industry.

15764. It has been the work, has it not, of the legislature and public opinion for many years past to build up this Board of Agriculture; and is it not a fact that there is a movement at present on foot for improving the status of the Board because it has been felt to be necessary in the interest of the agricultural community?—Yes, I am aware of that, and that has my entire sympathy.

15765. To convey what I mean, you realise the fact that agriculture is treated exceptionally and in a different way from the other industries.—Yes, fully.

15766. Then with regard to duplicating grants, or rather to grants being made from the two bodies, is it possible that that system arises from the fact that the funds at the disposal of the Board of Agriculture are limited, and that in order to develop these institutions they must come to the Board of Education to get further assistance or they must curtail their work as the only alternative?—I cannot tell whether these institutions have been refused grants from the Board of Agriculture, but if any institution doing good educational work applies to the Board of Education, if its work were suitable under the regulations, it would readily obtain a grant. No doubt if there has been any difficulty at all in getting a grant from the Board of Agriculture they would certainly prefer to go where they would get the grant.

15767. I am afraid I have not made myself plain to you. You said you were not aware of cases where institutions have been refused a grant by the Board of Agriculture, but the point I put is that the Board of Agriculture having no more funds at its disposal, the only alternative was to go to the Board of Education or curtail the work?—Of course I do not know what the reasons or inducements before the board of managers of an institution might be, but I can quite realise the possibility of the consideration you mention being effective.

15768. Are you aware of the existence of the Dairy School at Worleston in the county of Cheshire?—Yes.

15769. Is it not the fact that that has actually happened there?—I do not know.

15770. I am told it has, but I do not know whether that had happened to your knowledge?—I never heard of Worleston having Board of Agriculture grants.

15771. It used to have them?—I was not aware of that.

15772. Perhaps I have misunderstood it. Then another subject which you mentioned was the question of county council committees. You are aware, of course, that in many counties in England, taking the county with which I am most familiar, the county of Durham, the mining industry and the shipbuilding industry prevail there almost exclusively, and that with an educational committee there you get very little representation of agriculturists at all?—Yes.

15773. How would you meet a difficulty of that kind, because there are a great many agriculturists in the county of Durham. The number is 11,000 males over 10 years of age by the census of 1901?—I think it would be desirable in a case of that sort that the local education authority should take some steps, whether by sub-committee or otherwise, to have the interests of the landward or rural part of the area kept before them sufficiently prominently.

15774. But would you do that from a central department?—No; we would make suggestions of that type to the several local authorities.

Mr F. G.
Ogilvie, C.B.

19 Feb., 1908

Mr. F. G.
Ogilvie, C.B.
19 Feb., 1908

15775. Now that leads me to another point, and that is this: These letters that you issue and this memorandum and the various documents appear to me to be rather counsels of perfection. They are what ought to be done and what might be done, but what steps are taken to give effect to them?—The steps I have indicated. In the first place you must place a definite and arrestive picture before a body such as a county council or the local managers of an institution or the teachers, in order to get them to realise that something may be done. If you look at each of these papers you will see that we most distinctly state that we put these things forward knowing that some at least of the points suggested may be adopted and worked up by the community to which we address them. We are careful to exclude the idea that we think for a moment that each county council should do all of the things, or that each schoolmaster can teach all of the subjects, or that each course should follow the lines indicated; but we give indications, knowing that each person has some chance of finding, or each community has some chance of finding, one or other or several of the points suitable for development.

15776. But it would be very difficult in a county like that I have named, where practically the agricultural interest, although it is numerous in the whole county, is in a minority in almost every parish—it would be difficult, or it would not be very likely that they would take very much action so far as agricultural opinion is concerned?—Suppose Durham applied for recognition under Section 34, whether we recognised it or not, we should draw attention to the want of attention that they were giving to this, that or the other section of their work, and we should suggest that they might do so and so, or take steps by committee or by appointing sub-committees and so on, to do whatever it is that is required. In each case that we deal with we give, after most careful inquiry, a reasoned statement of suggestions as to the special needs which may have been neglected.

15777. You know, of course, that one suggestion about an agricultural committee was not that it was to be constituted *ad hoc*, but what was suggested was a transfer to the committee which existed for the purpose of carrying out other statutory duties under the Board of Agriculture and it was suggested that they should also undertake these duties?—I am not aware of what suggestions have been made, but I quite see what you mean. You mean a committee like that having charge of feeding-stuffs or the diseases of animals.

15778. Yes, diseases of animals and small holdings would be of that kind?—Yes. I quite see a committee of that sort might very well be consulted by its council upon these specific points.

15779. I want to know now how you propose with your ideas to safeguard the interests of agriculturists and to ensure that the work which has been begun should be continued?—We propose to do that, in the first place, by doing the best we can to encourage, in every way possible, the development of public opinion and the realisation of the full responsibility that rests upon a local authority in respect of all things that are given into its charge. We do that by securing, before we make any general communication upon the work of an area under the local authority, a full report from inspectors, not one but several inspectors concerned in the matter, and we draw attention to every point upon which we are quite satisfied that the authority is not doing as much as it might reasonably be expected to do. By continuous pressure in that direction, and no sudden pressure, no putting on of the screw by us, but by gradual and continuous pressure as occasion offers and opportunity arises, we hope to continue to make the progress which has already been made.

15780. Would the putting into operation of the policy which you shadow forth involve any extra burden on the rates?—I do not think so.

15781. Then you refer to the fact of the transfer of certain colleges in Scotland to the Education Department of that country. Would you tell me from what they were transferred?—From the Board of Agriculture, with the grant of these colleges. That was transferred to the Scotch Education Department with those colleges.

15782. You also refer to an examination in agriculture. Is that an examination carried on by your department?—Yes, carried on by our department.

15783. Is it open for any student who likes to come up for it?—Yes.

15784. Where is that held?—It is held everywhere, at various centres all over the country. The managers propose to hold it, and it is held simultaneously.

15785. I think I am quite clear in understanding that your object is that the work of the Board of Education should develop the intelligence of the child, and should be a preparation for the work of life?—That is so.

15786. But you are aware, no doubt, that the efforts of the Board of Agriculture have gone a good deal further than that, and do you propose to take up that part of the work as well as the other part of the work?—It is the Board of Education who have been doing the further part of the work. That is only the child in the public elementary school, but you are speaking of adults. The Board of Education have been administering the national grants and giving such encouragement as national grants can give, or have been giving under the conditions under which they were awarded, for the development of further education in the agricultural community as well as other parts of it.

15787. Does the word preparation mean preparation as it is used in this memorandum as referring to the development of the intelligence? I am now differentiating between education and instruction which is only of any real value after the learner has been two or three years at work on a farm—that is to say, after education proper has ceased?—During those two years our principle is that what instruction is available should be given, not in agriculture, but with a view to adequate mental and other preparation of the pupil to understand agricultural education. That comes later.

15788. But I have more in my mind lectures which are given to, not the pupils or the students at all, but to the farmers in actual practice, not even necessarily young men, but perhaps old men, as to the development of the industry?—Quite so.

15789. Do you think your Board would undertake that duty?—We definitely give aid in respect of that. My point is that local authorities have not quite realised that that is of value, and have not yet done as much in the matter of pioneer work and lectures of that kind as they might have done.

15790. But it is done by the Board of Agriculture?—Directly?

15791. In departments aided by the Board; I think it is so. You are going to take this work away from the Board, and you accept the duplicate system which you yourself condemned.—I do not quite understand what work you refer to. Is it work in relation to explaining the new questions arising in local procedure, or methods of protection for their markets, and that sort of thing?

15792. No, that is not what I was thinking of. I was thinking of the result of experiments with grass plots, and that sort of thing, which lads, particularly lads who have not been actually engaged in agriculture, could not make a real use of.—I am not aware whether the Board of Agriculture has been doing that to any considerable extent, but I am aware that that is precisely the sort of function that is referred to and pointed to by the regulations of the Board of Education.

15793. I am somewhat surprised at your not being aware of that, because, speaking for the north-east of England, it is so?—You mean the colleges do it, perhaps?

15794. Yes?—I know the colleges do it, and I think it is an important function of the colleges, but I did not know you were identifying the Board of Agriculture with the colleges.

15795. In our case the agricultural department of the college is so identified?—It receives a grant from the Board of Agriculture.

15796. Yes, and it is inspected?—I understand so.

15797. (By Lord Belper.) A good part of your evidence-in-chief was directed, I think, to pointing out to us what was the policy of the Board of Education in regard to the development of an interest in agriculture in the first instance in elementary schools and afterwards in the technical colleges. Now as to the effect of what you are actually doing, I think you admitted that there was not so much actual work with regard to developing an interest in agriculture in elementary schools as there might have been?—Of course; it was not an admission, but I stated the fact that what is possible to-day in elementary schools depends so very largely upon the ability of the teachers to do the work that until the teachers have been fully apprised and informed on the matter we cannot expect to have it. What we do find is an improvement in that way.

15798. Practically, you said that the old teachers have not had a training which would qualify them to teach rural subjects?—Yes.

15799. Those were your words, I think?—Yes, that very many teachers had not.

15800. Then have the Board of Education taken any practical steps to insure that these teachers should have the training in those subjects which it is desirable for them to have?—The Board of Education has been taking very marked steps to secure that, but only of recent years.

15801. What marked steps have they taken?—By the encouragement of these supplemental courses of instruction for teachers in precisely the sort of subjects that are best qualified to improve their equipment for such work.

15802. But have they taken any steps to insure that these teachers should be trained in that way besides advising it?—The Board of Education have no power to compel a teacher to attend supplemental classes. They have done everything they can by grants and by bearing part of the expense and by pressing upon those who are responsible for the training of the teachers the duty of seeing to it.

15803. Have the Board of Education applied to those colleges which could give the training to know whether they could do it if funds were found and they would carry it out?—The Board of Education are not charged with that duty. The local authorities are, and the Board of Education endeavour to get the local authorities to do their duty in the matter.

15804. I understand the Board of Education give grants in agricultural teaching, and I understand that there are colleges which are giving that training by means of funds, but they are not much assisted by the Board of Education taking up that work, are they, although it is practical educational work in the interests of education?—I am not quite certain of the facts. There are a good many teachers' classes. Take a case like that of Nottingham University College. That is doing a good deal of teaching of teachers in this way. These classes are aided by the Board of Education for this purpose.

15805. Where?—There is the Nottingham University College. That is the one that occurs to me at the moment.

15806. I am aware that a great deal is done by the Midland Agricultural College, and that is done out of the funds of the College, but that is partly the work of the Board of Agriculture?—What was possible in one or two colleges out of funds provided by the Board of Agriculture is possible still, but I should say that if by exiguity of funds not much can be done by that college, more might be done in co-operation with the local authority with aid from the Board of Education.

15807. I think generally you are very strongly in favour of the system which would place the whole of the agricultural education under the Board of Education exclusively, and that both in the elementary and higher schools and colleges?—Certainly.

15808. And you instanced Scotland as an example of where that had worked successfully?—Yes.

15809. Then you came to Ireland, and, in answer to some questions by myself, you pointed out that the strength of the Irish system depended on the connection of the Department of Agriculture with technical instruction, and you said that agricultural education and the management of agricultural education in Ireland was done by the Department of Agriculture and Technical Instruction?—Yes.

15810. But their weakness was, you thought, that they had nothing to do with the elementary education in the schools?—Yes, and secondary education.

15811. Are you acquainted with the Irish system which has been built up within the last few years?—Yes.

15812. Do you know Professor Campbell?—Yes, I do.

15813. Should you not agree that the main point of the success of that work which has been done in Ireland was owing to the fact that the Department of Agriculture works with a thorough practical knowledge of agriculture itself, and that they are in complete touch with the agricultural interests in Ireland, and that by that practical knowledge they have gained the confidence of those for whom they are working?—I should agree almost absolutely to what you have said, but I would point out, in agreeing with that, however, that the circumstances in Ireland and the functions of the Department of Agriculture in Ireland are so essentially different from those that obtain in England, that only partially is the parallel one from which you can draw much.

15814. I admit that Ireland is different, of course, but, at all events, the parallel might go so far as to show that it is of paramount importance that those who are employed

in agriculture should have thorough confidence in those who direct agricultural education?—Absolutely so.

15815. You agree with that?—I entirely agree with that.

15816. Do you think, then, that a board like the Board of Education, which has got such an enormous amount of work as they have to do in superintending the general education of the country could acquire that practical knowledge and practical interest in the work of the agricultural classes which would enable them to gain the confidence of those for whom the agricultural education is given?—I say that the Board of Education must acquire, in one way or another, such information as is necessary for performing the function allotted to it. But in your question you omit the influence of the fact that the Board of Education is but one factor in the educational machinery of the country. The machinery for the administration of education in England turns just as much upon local educational authorities as it does upon the Board of Education, and it is the combination of the two which has to be considered—that is, a combination which does not remove from the Board of Education the necessity of having at its command adequate expert advice and adequate opportunity for becoming familiarly acquainted with the work being done in relation to the many industries of the country—a state of things which simplifies much the method of combining the whole educational interests under one Board.

15817. I fully admit that no Board could do it themselves without working and cordially working with the local authorities who have to do the local work, and without whose assistance it cannot be properly done, but I suppose you consider that the local colleges and institutions, at all events, as to some of them, must have a considerable voice in the successful management of agricultural education?—I say they are essential, and that is why I say they should be under the Board of Education. They are the key of the situation, I say.

15818. But are you aware that the whole of the evidence—I think I may say the whole of it—which has been given by those representing those institutions and colleges, so far as they have expressed themselves in the matter, has been in favour of the control of agricultural education being now handed to the Board of Agriculture?—I can very readily believe that, because I do not know from whom you have been receiving evidence, and I do not know whether the gentlemen who have been giving the evidence have taken the precaution of ascertaining fully the policy and the work of the department with which they have not had to deal. The Board of Agriculture has done excellent administrative work, and naturally men who have been working under it and have been satisfied with that administration do not see, from their own point of view, any particular advantage in taking the risk of transference. That of course is very valuable evidence.

15819. At all events you will go so far as to admit that those institutions are satisfied with their connection with the Board of Agriculture?—Yes, I have taken that from you.

15820. Do you not think it would be rather strong not only to take the whole of that work away from one department in order to give it to another department, but that that should be done when that other department has not yet proved by their practical work that they are in touch with the agriculture of the country?—A similar transference took place in Scotland five years ago with excellent results, under precisely similar conditions.

15821. That may be a fact, but it is hardly an answer to my question?—To this extent it is an answer, that one need not prejudice the case.

15822. Then with regard to finance, I do not quite follow what your great difficulty is with regard to the financial part of the matter. I think you put it as one of the arguments in favour of it all being put under the Board of Education that the financial difficulties were very great at present?—No, I did not put it as a serious difficulty, but what I did put was that the simpler the financial relations the more satisfactory is likely to be the expenditure of money, and that the money at present available for higher education is none too great, and that therefore it is necessary to see that any possible economy from complete co-ordination of work should be secured, and that the interest of those who are concerned in the expending of every part of the money should be a common interest.

15823. Why should not a Board which is thoroughly equipped, or which would be thoroughly equipped for the

Mr. F. G. Ogilvie, C.B.

19 Feb., 1908

Mr. F. G.
Ogilvie, C.B.
—
19 Feb., 1908
—

work that they have got to do, and who are in complete touch with all the agricultural education that has been going on, and who also have practical knowledge of practical agriculture, be able to secure economy as well as the Board of Education?—I do not question that. But the point I make is that if you divide the money available into two parts you thereby diminish the economy of expenditure, because you have separate accounting and separate functions.

15824. I quite understand that a system in which you give the same institution grants from one public body and also from another cannot be helpful and that if you are to draw the line, you must draw the line in a different way. You must not allow them to overlap in that way. But who must decide which Board is to have the control of higher education?—But my point is that you cannot do that, because many of the institutions for higher education and for lower education have necessarily to give the education under both aspects. A great part of the evening class work is very complicated, and the services of the men on the staff, the instructors and all, ought to be available for all classes.

15825. I will not go into that question, but I do not think I am to be convinced as to any system in which work can be done in a more satisfactory way than it is now by taking it away from the Board of Agriculture?—Very well.

15826. (By Mr. Acland.) May I put a point that I do not think has been made quite clear; that is as to the newness of this development which you have been telling us of in the Board of Education. It is a fact, is it not, that given the grants for such subjects as you have described under the phrase "method and craft of labourers' occupations," the extensions of or aid to higher institutions beyond the subjects of the Science and Art Directory are comparatively of very recent growth?—Yes, they are.

* 15827. Nearly all you have told us of to-day has taken place since 1903?—But the point is that the Education Act of 1902 made certain things possible, and the Board has systematically worked towards making the most of that possibility.

15828. But would you agree to this, that a great deal of what you have described to us has only been made possible and has only arisen since the Act of 1902 came into operation?—Certainly.

15829. Therefore, there has hardly been time to judge of the success of all the new things which have started since then?—If I had been asked to give an opinion on the subject two years ago I should have had the greatest difficulty, but asked now I have no difficulty. The experience of last session and this session has gone very far to demonstrate that; it has gone far enough to satisfy me.

15830. Can you tell me what were the lines which influenced the Board in deciding to extend their aim for evening classes beyond such things as what are technically called science and art to crafts and so on—I understood that was a vexed question at one time?—It was the realisation of the fact that in many cases you could deduce the principles only through a certain amount of practice.

15831. Do you still retain as a sort of guiding principle that you will not give grants for anything in which there is not a principle of science or art involved?—I have not been able to discover anything in which there is not a principle of science or art involved.

15832. Therefore the subjects which are eligible for grants have extended very rapidly?—We do not talk about subjects. The field over which the grants are distributed has extended rapidly.

15833. Then as this development has been very recent, do you not hold that the very recentness of the development and the very recentness of the occurring of a considerable amount of overlapping constitutes a reason why it is possible to make a re-arrangement?—But there has been very little overlapping involved.

15834. But I mean the fact that it is very different now, that you could not aid hedge cutting classes and that county councils can aid them through money which they get under our direction, that is a very recent thing and it is rather an undesirable thing?—I do not quite understand about the county councils' aid under the Board of Agriculture.

15835. No, I suppose they do not, as a matter of fact, aid these things with money from the Board of Agriculture, but there is the fact that they come into the scheme of technical instruction, which is often under an agricultural committee?—What do you mean by often—I do not understand that. When you say often under an agricul-

tural committee, what distinction is there from being under an education committee?

15836. I think we have had evidence showing that the money spent by counties in aid of agriculture is considered largely as part of the money which they use for secondary schools and for educational purposes?—Yes, it is part of the general funds for higher education.

15837. And therefore there is as likely to be overlapping as your plan develops and begins to cover processes connected with agriculture between two states of the county council work at any rate, if not two activities of different Government departments?—I do not recognise the distinction of two states of the county council work, because I regard this work of further education of people already engaged in agricultural occupations as essentially part of the general work of the Board of Education.

15838. You think that you cannot draw a line between general education and the processes which are part of the trade or business?—Occasionally, in very definite classes—in dairying instruction—you can do that. But if the dairy process is to be improved it is quite necessary that there should be a full measure of improvement in the general education at that particular grade of the work as well as the distinctively technological work of making butter, and the two things are so interwoven that I can see no effective or satisfactory and clear line of distinction, and I think it would be most unfortunate if agricultural interests and higher education work should be restricted to purely technological work.

15839. In fact you could not draw a line of demarcation between such subjects as the subjects of agriculture which are very definitely educational, and subjects like dairying or thatching?—No, not a hard and fast clear line.

15840. You could not draw a line which would serve to differentiate the subjects to separate Government departments?—No. Between the two things you mention there is obviously a line, but the line is in subjects common to the two interests.

15841. You talk about higher elementary schools and secondary schools with an agricultural side, but you say that is a part of your work which is not at present fairly developed?—No, it is not at all developed, and the object of the Board publishing these suggestions of Mr. Dymond's at the present time is to direct attention to that particular field of educational activity.

15842. You find no difficulty in getting schools recognised as higher elementary schools that would have the higher grant?—Yes, if they satisfied the conditions. But the real difficulty has been with the people in the country—the teachers, the places and the managing authorities. They have not got a clear grip of what is required. That is the whole thing all along the line. As soon as they get a clear grip of what is required, then they can settle down and arrange classes for it. That is their relation to the work that I have referred to. That is the object of this publication that I have referred to just now, though it contains views upon many things in which there is no definite authoritative decision.

15843. But in old days it was practically impossible for any higher elementary school to be recognised as such unless it took the amount of science and art which would entitle it to be recognised as what we call a school of science. You do not find that difficulty now?—No. These regulations in the old days were part and parcel of a system in which everything was set down definitely. There was so much of this and so much of that. Now the Board of Education has worked away from that for several years, and the extent to which it has worked away is not yet fully realised, and we are doing at present very largely in the country a sort of pioneer business in trying to get people to realise that.

15844. So that if you put in a list of schools now recognised as higher elementary schools with agricultural courses, and a list of secondary schools with agricultural courses, that would not be representative of what you hope the development would be?—No, it would be very thin.

15845. So far as the reports you receive go, do you believe there is a considerable field for both those sort of schools?—I do, and there is a considerable feeling towards them.

15846. There would be no difficulty, so far as you are aware, as to their being recognised if that type of school comes into existence?—I understand the Board would welcome them.

15847. You talked, I think, of a block grant, that is, a block grant to a county for all its work of a certain type. That is obviously a very useful weapon, but have you yet

come to the stage of refusing, or making difficulties as to giving, that grant because you did not think the field of agricultural instruction was sufficiently covered?—Yes, we have.

15848. And you believe that to be a thoroughly useful power to have?—Yes, we have reached the stage of saying: this arrangement you put forward is not really a scheme at all. You have not touched the fringe of the needs of the community you are dealing with. You are dealing with a purely agricultural community, and you have made no provision except by means of a number of nature study classes, and some classes in wood carving, and some in arithmetic, and some in something else, but these have no particular relation to the work of your people, and unless you go back again and turn out a scheme making due provision for their educational needs we certainly cannot give you a grant at all—and unless it is a good one it will not be awarded much grant. We have reached that stage, and the effect is obvious.

15849. I understood from you that you did not see your way to drawing the line between one subject and another, these subjects being mentioned with regard to evening schools, but do you draw any line in higher institutions between the subjects which are connected with science and art and other subjects which you do not recognise as coming under your Board?—Do you mean higher institutions other than agricultural?

15850. Yes, other than agricultural?—We take cognisance of the whole of the work that depends upon the special object of the preparation of the students. Suppose it was electrical engineering, we take cognisance of his workshop work as well as his lectures or laboratory work.

15851. Would you definitely increase a grant because of good workshop work?—We should restrict a grant if there was not good workshop work.

15852. In fact, you do not say when giving a grant to institutions, to higher technical institutions: "This is in our province, and that is not," but you look at the whole institution?—Yes, we look at the whole of it.

15853. And similarly with higher agriculture?—We have not got cases of any higher agriculture grants, except to the Swanley Horticultural College and the Harris Institute but we have in those cases.

15854. (*By Mr. Lamont.*) I think from what you have said, you regard as entirely satisfactory the fact that agricultural education in Scotland is exclusively in the hands of the Scotch Education Department?—Yes, entirely satisfactory from the educational point of view.

15855. And from the agricultural point of view?—I think it is in the long run. It is possible that it may not be for the greatest immediate advantage either in Scotland or in England to make such an arrangement, but in the long run it is eminently so.

15856. You therefore regard the transference from the Board of Agriculture as having had, I think you said, excellent results?—Yes.

15857. Can you tell the Committee whether that is the opinion of agriculturists in Scotland generally?—I must now speak of the time five years ago, because I have not been sufficiently in contact with agriculturists in Scotland for the last five years to be able to give an opinion on that, but at that time it was clearly recognised that the absorption of the interests of agriculture in agricultural education by the Scotch Education Department, which took place then, was of great advantage in bringing together the whole of the agricultural bias or aspect of education in the different sections of the work carried on by the Department.

15858. You have not heard it suggested that the result might have been more satisfactory still if the control of agricultural education, instead of being transferred to the Scotch Education Department, had been transferred to a Sub-Department of the Board of Agriculture, sitting permanently in Edinburgh, not an independent Board of Agriculture, as proposed at present under the Government Bill, but a Sub-Department of the Board of Agriculture?—No, I have not heard that suggested.

15859. We understand, and we have it in evidence, that agricultural education in Scotland is practically confined to the three great collegiate centres of Edinburgh, Aberdeen and Glasgow?—Higher agricultural education is certainly so restricted, but I do not know that the agricultural interest in education is not as wide as the country.

15860. Quite so, but the education itself is?—Formal agricultural education of the highest grade is restricted to the institutions in those three places.

15861. Can you tell me whether in any case those three institutions own a farm?—One does—the West of Scotland College. *Mr. F. G. Ogilvie, C.B.*

15862. It has the right of entry to a farm?—Yes, it has that relation to a farm. *19 Feb., 1908*

15863. Can you tell me anything as to the position of Scotland relatively to England with regard to intermediate agricultural education?—I do not know that I ought really to speak of that matter, because my information is not of the most recent, but in case it should be of value, and with that restriction or observation, I can give you my view on the matter. I say that in Scotland you have a very large proportion of teachers in the better parish schools, who have themselves had from boyhood intimate acquaintance with agricultural affairs, who have had during their life close contact with people who are carrying on agricultural operations, and are themselves therefore, in complete sympathy with, and who have very considerable knowledge of agricultural matters. These men are relied on by the education authorities to keep well in view the ultimate occupation of the majority of their pupils in the schools, and their own personal knowledge of subjects as are most likely to be suitable vehicles for education in the elementary school has been systematically improved by the Scottish Education Department work under Section 91 (d) of the Scotch Code, 1906 (now transferred to the Regulations for the Preliminary Education, etc., of Teachers).

15864. But that would be rather more parallel to nature study in England, and to the teaching of natural science in the schools, than to the question which I more directly ask, that is, the position of the intermediate agricultural education you have in Scotland to deal with this essential point of difference as compared with England, that the secondary schools have been for generations in direct relation to the bulk of the people, and that therefore a pupil who is going forward for further education is far more likely to have a secondary school education in Scotland than until quite recently would be the case in England. The point of importance in the agricultural connection with intermediate secondary schools in Scotland is that those schools now provide a very thorough and almost universally very thorough training in Science and in drawing, as well as the usual literary and mathematical instruction necessary. So that where a farmer's son is sent on to a secondary school, he does get in that secondary school quite certainly the sort of preparation necessary for his going on to the agricultural college. Further, there are certain central schools in agricultural districts where there is given definite prominence to those subjects, that is, to the training in science, and to its bearing upon such work as the students are likely to require, and in that respect Scotland has reached a little further step along that path than England yet has. Therefore, you have a more complete adaptation of secondary education to the needs, but not to the technical needs, of the agricultural students. But that is of less importance, because wherever you have got a student who is likely to be going forward on that line in Scotland, if he is in the least likely to benefit by higher technical education in agriculture, those responsible for him, parents and guardians, and so on, are quite prepared to send him to an agricultural college.

15865. Then you do not think there is room in Scotland for the development of farm institutes or for schools on the lines of Basing, or Ridgmont, or Newton Rigg, for the sons of farmers, or for people desiring to enter farming, but who do not see their way to go on and take a full university course at a centre?—When you speak of an agricultural college in Scotland, I may say you may have a complete course, and there is also facility for students taking shorter courses.

15866. For a year that is?—There is a definite arrangement for a year's course, say. Of course a good deal depends on the type of farming for which the man is intended, and it is a question on which I have no sufficiently informed opinion to quote as to whether in Scotland there is a need for anything between the winter courses for small farmers' sons who during a great part of the year may think of taking a winter course for one or two years, and a complete course. It depends very largely upon the type of work and the class of man the education has to be provided for. But that is the first duty of the organising authority—to make up its mind as to in what sections of the community there is really a demand, and what is the type of instruction most suitable for those sections. I am not prepared to say whether the winter

Mr. F. G.
Ogilvie, C.B.
19 Feb., 1908

course, on the one hand, for the smaller farmers' sons, and the two or three years' course on the other, for those who are prepared to go on and take a longer course, as between them do not cover the whole ground. I do not mean not with individual exceptions.

15867. I hardly take that view myself of Scottish agriculture. I think the Scottish farmers would appreciate it very much if there were such schools as Basing scattered throughout the country, where their sons could take a complete winter course or a short course without going a long distance out of their own particular farming district to, say, Kilmarnock or Aberdeen or Edinburgh?—I could quite believe that might be true, but I am not in a position to give an opinion one way or the other.

15868. Then I should like to ask a few questions with regard to lecturers and lectures in Scotland. Was it your experience up to five years ago that the lecturers as a rule in Scotland had won the confidence of the farmer to the same extent as that in which they have won it in England?—They were only just beginning. It had been systematically going on for about four or five years at that time, beginning about 1898, if that is on a sufficient scale to test it. They had very largely won the confidence of the farmers. The lecturers are referred to as county lecturers. To take as a typical case the East of Scotland, the Agricultural College there had a staff, and that college received subsidies from all the south-eastern counties in Scotland, and in respect of receiving those subsidies it sent its lecturers to a certain number of centres that formed a part of the organisation. Those lecturers took up the work of pioneers in agricultural education generally, and specialists at farmers' clubs and institutes on market days, and they advised the teachers of the elementary schools as to how they should do this, that and the other thing, and worked with them upon evening classes, and visited the evening classes. They worked with them, and worked the teaching in, and so on, until generally the college became the central point of things for the area to which it was attached. Those lecturers did rapidly acquire the confidence of the farmers. The lecturers were not merely the college staff, though they were sent by the college. They might be lecturers whose time was not required by the college. It might be a veterinary surgeon, or a professor of anatomy, in the veterinary college, who might go down and give an occasional lecture in two or three places at the instance of the college.

15869. My own experience of the West of Scotland, of Argyllshire, with which I am most connected, is that those lecturers have not as yet excited any interest or any confidence amongst the farmers, and at the last lecture that was given in my own district the total attendance was only two, one only of whom was really directly connected with agriculture, so that I think there is still room for fostering the confidence of the farmers and for developing their interest in this work?—May I say in reference to that difficulty, which is not uncommon in these things, that the whole point is the personality as well as the knowledge of the lecturer. You may have a man who knows all about it, but who cannot put it in an interesting way. The difficulty of the teacher is the crucial difficulty from top to bottom of this business, and if you cannot get a good teacher you are throwing the money away. There is no doubt about that, and I suppose every college, and institution, and county council, has had its unfortunate experience in that respect.

15870. I agree very much with what you have said just now, that the elementary school teachers in Scotland, to a greater extent perhaps than in England, have a hereditary interest in rural affairs, but can you tell me whether in Scottish elementary schools hitherto history has been taught with any bearing upon agriculture or even any bearing upon rural elementary economics?—I should like to say on that that only in individual cases do I know that that has been so, but I may also add that the subject of the teaching of history has been made the subject of special inquiry, and just recently, of special advice by the Scotch Education Department. They have issued a most able pamphlet, which one would hope to see produce a marked effect. It is in that kind of way that the Department, appreciating weaknesses, can gradually give strength.

15871. The teaching of history of this kind is having a most excellent effect in Denmark. and one may hope it would have a similar effect in Scotland?—I quite agree.

15872. (By Mr. Latham.) I think you told us that for a very long period certain things had been done for the

benefit of agriculture prior to this date. What has it been?—I do not think I quite put it in that way, but that certain efforts had been made with a view of benefitting agriculture.

15873. Whether anything has been done, or only efforts made, what have been the efforts?—The old Science and Art Department established a system of grants upon passes in examinations in agriculture. They sent a lecturer to go over the country and endeavour to arouse enthusiasm in this matter. He did arouse a good deal of enthusiasm in many places, and he had schools started and teachers set to work, but the question of how far the classes were beneficial was quite another affair, for it turned again upon the teachers, and it now appears that the effect of the work done on those well meant lines was not sufficient to justify its continuance.

15874. About what date did that begin?—I do not know. I know that these influences were at work in Scotland as long ago, I think, as forty years; and I should think in England, nearer the headquarters of the Department, they must have been at work before that.

15875. But you do not know?—Say 50 years ago—that is near enough.

15876. Do you really mean to say that there has been a great endeavour by the Board of Education to take up agriculture for 50 years?—No, I say that the Science and Art Department made such effort as it thought itself justified in doing with the funds it had, and with the wisdom it had, to organise some 50 years ago. The Board of Education is only a few years old, and its efforts are quite different.

15877. But if it is only a few years old, has it, during its life, made any speciality of agricultural education?—It has. During the first years of its existence it made a special study of the conditions of agriculture; and during the last two or three years it has made special efforts to get local authorities and those taking part in agricultural education to put their work on good lines.

15878. Has that been successful?—In the places where the community have taken up the matter it has already achieved considerable success, and that success is promising to increase.

15879. But there is no pressure put upon local authorities by the Education Department, is there?—I do not think, as an official of the Board, I should say the Board puts pressure upon them, but it puts considerable inducements in the way, and endeavours to persuade them.

15880. Can you tell us what the inducements are?—The offer of grants in aid of instruction carried out on certain lines; the advantage of suggestions or details of the methods of application of grants, and the assistance of inspectors in organising work, or in discussing special methods for adoption.

15881. Is there any criticism on the several authorities that do not do anything?—Yes. When an authority puts itself in the way of having its scheme considered as a whole, the Board of Education criticises the scheme such as it is, or the absence of scheme if there is no satisfactory scheme.

15882. Does it pass a vote of censure on them?—No, it does not amount to a vote of censure. It is not quite the practice in England to expose local authorities to votes of censure from the Board of Education.

15883. Then there really is nothing done by the Board of Education to promote agricultural education under pressure?—Under pressure?

15884. Under pressure?—Well, yes, under pressure of the general kind which alone is available; for the Board of Education has got no statutory authority to press.

15885. Was it the Act of 1889 or 1899 that you quoted just now—was not that the time when technical education was being discussed?—The Board of Education Act was in 1902.

15886. That is secondary education; but was not there a Technical Education Act in 1899 or 1899?—There was an Education Act, but there was no authority under that Act. Under that Act all they had to do was as successors of the Department of Science and Art, to authorise the expenditure of money by the counties or by the authorities upon specific subjects named. It fell to the department to say whether a certain subject might be approved as a vehicle for instruction under that Act.

15887. But did not the education authority prevent that Act being carried out by county councils?—Not to my knowledge.

Mr. F. G.
Ogilvie, C.B.
19 Feb., 1908

15888. We were prohibited from giving prizes in the show yard and different things through the education authority?—I was not aware of that.

15889. Now I see in this book of yours, which I cannot help saying I am very glad to see, that you advocate a good many of the things that we were prevented from doing then?—That shows we have been advancing in wisdom as we have in years.

15890. But have you at the present time put any of these things in operation?—Our business is to encourage the local authorities to put them in operation.

15891. Yes, but they will never do it without pressure being put upon them.—Whenever a local authority gives us an opportunity we act. We sit here watching for opportunities to put pressure on, and whenever we get an opening then we put on the screw.

15892. I want to ask you rather a pertinent question. What has the Board of Education ever done to assist agriculture?—I have been trying to explain for the last three hours the various matters in which we have systematically set ourselves about to do it.

15893. But has it been successful?—Very successful in the quarters where we have received sufficient encouragement, and in the other quarters we have got to take those methods which are proper, as I have explained already, to a Government department acting under legislative conditions.

15894. I dare say you are very well aware that there has been very great feeling by agriculturists generally about this education question?—About some parts of the education question I am aware there has been very great feeling.

15895. Do you not think, if you attempt to take this away from the Board of Agriculture, that agriculturists will resent it very much indeed?—I do not suggest that this work in the rural areas should be taken away from the Board of Agriculture. I suggest that the work which is being done under the Board of Education in the rural areas should be extended and made more useful and made firmer in every way.

15896. But you are not going to teach much agriculture in elementary schools, are you?—I should not think of attempting it.

15897. Why?—Because I do not think it is a good thing to try to teach agriculture in elementary schools.

15898. Do you think these lads will do much agriculture in higher schools?—I should hope they would.

15899. Have you had any experience of it?—Yes.

15900. And you have found these lads, after a certain age, are willing to be taught agriculture?—Yes, and I should go further and say that any attempt to teach them agriculture in elementary schools would do a great deal of harm.

15901. In what way?—Because it makes them imagine they know things when they know nothing about them whatever. They are too young to understand anything which is actually essential to agriculture. They can quite understand and appreciate many things which help to form their minds in the directions that enable them to follow agricultural instruction later, but to give them technical instruction of an agricultural kind, under the ordinary conditions of elementary school work and under the ordinary conditions as to remaining at school that hold in the different elementary schools in rural areas, would be ridiculous in my opinion.

15902. But these lads are kept there till they are 14 years of age?—No, they are not, or very few of them.

15903. A great many round my district stop there till they are 14—they are kept there or they stop there?—That is, unfortunately, a rare experience. The number of pupils in rural districts over 12 is very limited, taking England as a whole. If you take a large number of counties and you take the number of those remaining over 14 they are few. I am talking of the instruction that is purveyed as that described by me and described in the Suggestions for Rural Education.

15904. But if they are to be asked to attend these evening classes, do you not think they will want to have the beginning before they leave the elementary schools?—Yes, certainly. I think it is most desirable that they should have the beginning, but the beginning could not in my opinion take the form of teaching any agriculture.

15905. How are these lads to take any interest in agriculture if they are not taught it in the schools?—I am afraid that the difference between you and me is one

of definition. I was thinking of agriculture as a specific and technical occupation; but from that last question I think you must be looking at it in a wider sense, and taking agriculture to merely mean matters of rural interest. If that is so I think that is most important that in elementary schools the attention of the pupils should, be directed towards matters of rural interest. Their intelligence should be developed through that. If that is not done I consider that they are very much less well prepared for subsequent work in agriculture than they ought to be.

15906. To go to a very old subject, everyone now tells us about their anxiety about the people leaving the land. Do you not consider one of the greatest reasons is that the children are taught no agriculture whatever in their schools, and that when they leave school they are vastly more fitted for commercial life than they are for agriculture?—I think that has something to do with it, perhaps, but I think it is by no means a deciding influence.

15907. But do you not think such things as plant life and interest in animals and that sort of thing might be taught very well in the elementary schools?—Yes, certainly.

15908. That is agriculture surely?—I thought we were not talking about the same thing. I do not profess to know about agriculture; but I take a great interest in all these things, and that is, I think, essential for those living on the land, undoubtedly. It is a matter of general education, and it is in that direction that one can help to promote general culture and knowledge.

15909. I very much agreed with what you said about the ignorance of teachers with regard to agriculture. It is lamentable to know how little in an evening school they know about it; and how is that to be improved?—Am I to take the wide definition of agriculture that I understand you to take?

15910. I am an agriculturist myself, I had better say?—Yes, I know, and taking the wide definition of interest in rural matters to be agriculture, I think it is to be improved most directly by the influence of these vacation and Saturday courses and that sort of thing. In the case of teachers who are at the present moment engaged in the work of elementary schools, they, by the help of the expert teachers of agricultural subjects who are sent round, might become more or less interested in such education in their districts, and taking those influences together and singly, one might hope in time to make a very considerable difference in the matter.

15911. A great many of these elementary teachers have got a great deal of their education in elementary schools, have they not?—The beginning of it, yes.

15912. Would it not be a very good thing if these men and women who are likely to be teachers should be taught a certain amount of agriculture in their earlier days?—Yes, the rural interest ought to be developed.

15913. (By Mr. Lamont.) That is suggested by Mr. Dymond?—Yes.

15914. (By Mr. Latham.) I am very much afraid that if you take very much of the agricultural education from the Board of Agriculture you will absolutely stop agricultural education altogether?—What I am putting is my own clear opinion, which is that it is most important to have this interest inculcated in the elementary schools. If you trust to this being done by a Board which has nothing to do with elementary schools you will trust to a broken reed. If you are to get it in the elementary schools at all, you must do it by the Board which has the effective control of these schools, and you must do all you can to strengthen the hands of the Board.

15915. That is putting the cart before the horse. Should not the Board interest themselves in it?—But they do.

15916. But they take no interest at all, as far as I know, in agricultural affairs?—I have a little more intimate knowledge on that matter.

15917. I do not think you realise the fact of how very little the meaning of the word "education" is understood in the country; and if you go and put it all under the Board of Education instead of under the Board of Agriculture I am quite satisfied it will drop out?—That may be so.

15918. Let us go as far as the secondary schools. I think you said just now you did not wish agricultural education to be taught there?—No, I did not. I was talking of the Scotch schools and the Scotch Education Department. I think the precise manner in which agricultural teaching should be limited in intermediate education, whether in secondary schools or in higher elementary schools, depends entirely upon the conditions

Mr. F. G.
Ogilvie, C.B.

19 Feb., 1908

of the neighbourhood. The conditions of different regions of England are very variable, and what is good in one region may be not so good in the next-door region, and because of that I say the Board of Education have, after considerable inquiry and much careful discussion of the matter, put forward with general approval the suggestions which are drawn attention to in Mr. Dymond's paper, which covers several different lines of correlated work, and where in a certain section of the country one thing is dealt with and in a second section another, and so on. In some parts secondary schools ought to have definite relation to agricultural work, but in others it is not only unnecessary, but undesirable. It entirely depends on local conditions.

15919. If these lads are not taught something about agriculture before leaving the secondary schools, how are you going to teach it to them afterwards?—Any lad who would not be taught anything relating to agriculture in a secondary school would still have had a training in science and in drawing, and language, and so on, which would be the proper basis for his further work in an agricultural college, and would enable him to approach with a wider outlook that work which he would be getting to do on his father's or somebody else's farm at such intervals as he had, whether before or after going to the agricultural college; and he would, therefore, have supplemented an interest in agricultural subjects by all that would be necessary. If it were the case of a lad not in an agricultural college, then he ought not to be taught at a secondary school of the type I have just described.

15920. I have heard nothing about scholarships. Do you advocate scholarships being attached to these centres that would enable a lad to get to a college?—Certainly. The relation between the schools of various types must necessarily be either a matter of the payment of railway fares, where necessary, or a supply of scholarships of various grades and amounts according to circumstances, each case being considered by itself in each locality as to distribution of centres of instruction, and each case of need for different types of instruction being considered on its own bottom. If you look in that Form 906 it gives a sort of detailed suggestion about the kind of organization suggested by the Board, and you will see we attach considerable importance to that.

15921. Then these scholarships would be attached to secondary schools, to be won by certain pupils who will go on to certain colleges in different localities?—That would be one of many arrangements possible in certain types of locality, but not in all.

15922. Not in all?—Not in all.

15923. I suppose agriculture will be represented in all localities; and how are the boys to get the instruction if there are no colleges?—There the systems of agriculture and farming, and many other things, affect this question, and the conditions of different localities, which vary greatly in these respects.

15924. Would these scholarships be offered through county councils or by the Education Board?—That is a matter of detail.

15925. I understand it is detail, but it is a matter of great interest to the pupil?—If all the pupils of the particular area considered it necessary to pass through a particular school on their way to college, and if the particular school was the only avenue from the county to the college, the scholarship should be awarded in connection with the school; but if the Local Authority had to deal with several such avenues, they would have to make arrangements to make their award common to several schools. That is what I mean by detail.

15926. Then do you suggest that you should give grants to the different colleges?—That the Board of Education should give grants?

15927. Would the Board of Education give grants to the different colleges?—My suggestion is that the grant given on behalf of the Government to the colleges should pass through the Board of Education.

15928. Have you done anything at all towards assisting veterinary science?—In respect of the teaching of lower grade work in veterinary science, farriery and matters of that sort, and such like information on the needs and interests that exist in the matter of the hygiene of animals, the ordinary arrangements for aiding the local classes hold good, and have been taken advantage of, but in respect of higher veterinary colleges, no. We have not been called upon to give any aid in that respect.

15929. Do you think that desirable or not?—I think veterinary colleges are central institutions, and are certainly useful. They are technical institutions.

15930. Notwithstanding the existing controversies of the present day they are very essential for obtaining the highest knowledge possible?—Yes, they are in precisely the same position, in my opinion, as medical colleges. The Veterinary College in London and the one in Liverpool are precisely in the same relation to the State, as regards the need for state aid, as medical schools.

15931. You talked of experts in agriculture once. What do you mean by that?—I should have said, perhaps, experts in some section of agricultural knowledge, but I forget in what connection I mentioned them.

15932. You made some allusion just now to types of farming. What did you mean by that?—Sheep farming and stock raising, and so on.

15933. As taught by the Board of Education?—No, as practised by the farmers of the country.

15934. What has that to do with agricultural education?—It has a great deal to do with it. If you are going to train a man to be a sheep farmer it does not require quite the same sort of education as if he is going to be growing crops—where, for instance, wheat and roots are the main thing.

15935. I think you are now getting into practical agriculture. I do not know whether you are likely to take up the teaching of practical agriculture?—I have no such intention.

15936. What did you mean by agricultural bias?—Keeping continually in view the fact that the education that is being supplied to a pupil should have some relation to the interests with which he was afterwards to be connected, those being agricultural.

15937. Having taught all these things now, and all you seem to wish to teach them, shall you be surprised if they do not become agriculturists after all?—I should not be in the least surprised if that was all they had had, but all the work that I have been talking about to-day has been considered as a part of a general education. The other and main part of it was obtained on the farm.

15938. One word more with regard to lectures in respect of which you say you have had a great deal of trouble in providing lecturers. How have they been supplied?—Purely by the county authorities taking pains to secure good men who knew something of the practical work of agriculture, and who had added to that scientific training sufficient to enable them to enter into the principles of it, and to communicate those to the pupils.

15939. Now where have they come from?—Some of them have come from agricultural colleges, and others of them have been men who have had a fair education, and have had very good practice in their own work in the country, and who have added to that careful study of scientific principles in evening classes or in short courses.

15940. Have they got their education through the Board of Agriculture?—They have got their education partly at schools aided by the Board of Education. Many of the best of these teachers have received their education in evening classes, and have added to that, perhaps, a short term at the college.

15941. Farmers are rather a peculiar people, I am willing to admit, and if you send a man down to lecture a farmer, in all probability the farmer will teach the lecturer more than the lecturer will teach the farmer, and therefore I do not wonder at the great feeling against them?—I do not think farmers are peculiar in that respect. Any practical man can always give more than he can get in certain aspects of the work with regard to teaching.

15942. Yes, but some of these teachers teach farming and they are not very well up in it, and where do they get the science from?—If it is desirable to teach science to a farmer it is desirable to do so wherever he has got his knowledge from, and if he has got it in classes and has also been engaged on the farm he would be the last type of man I should expect the farmer to teach much to. The man who would be taught much by a farmer would be the man who had not much knowledge.

15943. (By Dr. Somerville.) I suppose you are debarred by statute from aiding such an institution as the Royal Veterinary College?—I have not inquired into the matter. I do not know what statute at the present moment would debar us. If the Royal Veterinary College applied for aid I should inquire into it, but I cannot say at the present moment whether we are debarred or not.

15944. We have had it given in evidence that the Royal Veterinary College has been struggling against difficulties for some years and last year the Board of Agriculture gave it £800, and I should like to know why the Board of Education, with its more ample funds, did not aid this important institution, unless you are debarred by Statute?—I should say, first of all—and it might be quite a sufficient answer—it was because we were not asked; but further, as I say, I do not know about there being any necessity. It depends entirely on the conditions of the college charter, and so on. The only thing that I can think of as debarring us in such a matter would be that the school may not be suitable in character and financial position to receive aid from the Board. To receive such aid it must not be conducted for private profit or farmed out to profit. There are many other conditions, but that is the one that generally hits most cases of the kind.

15945. Apparently, at any rate, the conditions had not been such as to prevent the Board of Agriculture stepping in to aid it?—No.

15946. Then I think you have said that the Board of Education, if it found that a scheme submitted was not suitable to the requirements of the locality, would send back that scheme with an indication that a new one must be prepared better adapted to the wants of the people?—Yes. Such action might be for two things. When we receive a scheme, we may say, This is a scheme which we cannot accept, and we point out the matters in which we think it defective; or we might say—and this is the more frequent case—We think that that is good enough so far as it goes and we will give you a grant of not less than so much, say £1,200, for the work which you have set forth that you are prepared to do. If the work at the end of the year is found to have been better than we felt that we could count upon its being, we will give you a larger amount, and we draw your attention to the following points in the scheme which appear to us to require amendment or improvement; and then we detail a great many points. Some of these are points which can be set right in the course of the year, but more probably they are points which we want the authority to keep in view for the next year's scheme.

15947. Are you now speaking of your relations with the county education authorities?—Yes, what I have just said refers only to cases where we are put into a position to consider the proposition for the county as a whole. That is under section 34. Previously to the establishment of section 34 we had far too light a hold upon the organisation. Our grant had to be made entirely in respect of separate schools and it was too difficult for us to press for organisation. That is the object of the section.

15948. Have your relations been altogether with the county education committee or do you come into direct relationship with the still more local organisations?—We may give grants to a school not working under the control of the local education authority at all, but the great majority of our schools are working under their control; and almost all of them, if not working under their direction, are with the approval of the local authority covering some particular section of the field of work which is properly taken account of in the organisation within the area.

15949. Then do I understand that the schemes that are submitted to you come from this large county education committee?—Yes.

15950. This county education committee making itself responsible for the details of the scheme for each particular parish or other local unit within its area?—Making itself responsible for the general arrangement and for the provision for the area as a whole. But we have to press—and it is a case of having to press—for a fair amount of responsible influence being given to local managers in connection with the carrying on of such work. In the separate parishes we regard it as of the greatest importance that those specially interested locally should have some responsible duties to perform in connection with it.

15951. Then I take it you come in contact with the managers of local schools through your inspectors?—Yes.

15952. But that you do not hold communication with the managers of local schools as regards their local schemes?—Not directly, but we should if it were a school that was simply working in the area of the authority, but not a school carried on by the authority. In the county areas, the rural areas that is, a very large part of the best work from the point of view we are discussing to-day is now carried on by people directly paid by the county authority, but much of it is still carried on by people who are not

paid by the county authority but for whom the local managers are financially responsible and with whom, of course, we have direct relations, subject to the condition that the local authority knows the position of the school in relation to the general scheme.

15953. Then, I suppose, if you had a report from an inspector that the work in some particular school was not in conformity with the requirements of that particular district, you would bring pressure to bear, I presume, upon the county education committee or authority?—Yes, and on the local managers, if there were local managers who had the effective power of the purse.

15954. Upon the local managers—would you actually go to the county or go direct to the local managers?—It depends on the precise relation that has been established in the district. We prefer to have our arrangements made through the county authority.

15955. But you would not, I suppose, send an inspector or an expert to consult with and confer with and advise the managers of any unsatisfactory school?—Oh, yes, certainly.

15956. You would have such close personal relationship as that?—Yes.

15957. But you have already said you prefer to work through the county committee?—Yes, on the general question of the supply of education over the area, but then, when it comes to getting a particular school to do efficiently the work that is committed to that school, we could not trust to following the suggestions through a long chain of people.

15958. In the statement you were so good as to submit to the Committee you indicate, of course, a few large sections into which education of an agricultural character falls, and I suppose we may conclude that a great deal of this rural education is conducted through classes meeting two or three times a week, during the day or in the evening?—Yes.

15959. I suppose that comprises the bulk of the work?—That is the bulk of it.

15960. I suppose that these classes are to a large extent guided by the syllabus set out under Subject XXIV.?—No, a comparatively small number follow that syllabus.

15961. For whom is this syllabus particularly intended, then?—It is intended rather for those who are giving more continuous attendance to, and who are prepared to undertake a course of fuller scientific preparation than is possible for the average rural evening student. In fact we have been working towards a course of instruction which will more directly meet the requirements of the lower grade of instruction.

15962. But Subject XXIV. goes nearly as low as one can go?—Yes, but if you look at the syllabuses on pages 239 to 251 you will find there suggestions for methods of instruction in general experimental science. Then at page 243 you will find the memorandum I have already directed attention to. Page 245 deals with elementary agricultural science, and then with plants and soils, insect friends and enemies, measuring and weighing, and other rural subjects. We find that for courses that demand a much less broad scientific basis than Subject XXIV. does there is a great demand. For the work on the plan of Subject XXIV. there is a smaller demand. Subject XXIV. is maintained as a subject of examination in the interests of a higher grade of agricultural education than that in which the great volume of the work under the Board is done. Subject XXIV., for instance, shows the particular training we would like to see men have who are evening class pupils and who take a central class of instruction for so much of their work, and qualify themselves, say, by getting up to the combination of second stage passes or honours under Subject XXIV. before taking up work as teachers, that is as rural teachers, in agricultural subjects.

15963. Then, do I understand that Subject XXIV. is rather taken under your section 2—full time advanced instruction?—A great deal of it is, but still we keep it for those who take more advanced instruction in special classes, where that is available other than in separate institutions.

15964. Of course, there is an examination of the work that is done under these syllabuses; may I ask whether there is any pressure of any sort brought to bear upon a pupil who takes the classes that are guided by the syllabus with regard to whether he will go in for an examination or not?—No.

15965. That is purely voluntary?—Purely voluntary.

Mr. F. G.
Ogilvie, C.B.
19 Feb., 1908

Mr. F. G.
Ogilvie, C.B.

19 Feb., 1908

15966. Except for such pressure as may be brought to bear by the teacher?—Yes, who has no financial interest in the results of the examination. No one has any interest financially, and no one derives any financial advantage by the student passing.

15967. In the old days, I suppose, the teacher looked for his remuneration to the grants that were paid upon the results of these examinations?—Yes, and what was found was that the nett result of that was a tendency to attend to and do more in the direction of cramming the student for examination than of really educating them along the lines indicated by the syllabus, and the present position of the Board was taken up a number of years ago with a view to securing that the educational result should be the sole determining factor in the work of the class.

15968. These results being determined, I presume, by inspection?—By inspection, that is so.

15969. What has become of the teachers who used to conduct classes under a payment-by-results system. Are they carrying on classes now in agriculture and such like subjects?—In most subjects, yes, but as far as agriculture is concerned a good many of the teachers who made quite a good living out of it were really teachers who were not qualified to do the work satisfactorily, and those teachers have disappeared.

15970. When you say making a living out of it, I suppose they had the knack of getting men through these examinations and drawing payment for the results?—That arose in several cases, and that was a determining factor in the change made.

15971. I think you said in your evidence that the Board of Education examined anyone who presented himself?—Yes, who presented himself in the usual way.

15972. Do you mean anyone who had passed through a qualifying class?—No, not necessarily through a class at all. There is a provision for external candidates. In fact on this very subject I should say it would be not at all uncommon for a candidate to be in a place where he could not get sufficient instruction in the higher grade of Subject XXIV. He would work in a good chemical laboratory and he would do chemical work, conducting this work under the supervision of a chemical teacher. That is the type of work. He might do the same with his botany, and he might not really be a student in any class of agriculture at all, and yet he might come up as an external candidate for an examination in agriculture.

15973. But as a candidate who had got systematic instruction in a chemical laboratory?—Yes. The subject is so arranged now and the examination so conducted that unless a man had had systematic instruction he could not pass.

15974. That should apply to every subject, but as you know, the second stage is divided into two branches, the one being practical and the other being scientific. Now without receiving any instruction in any laboratory, it would be possible, I presume, for a bright youth by systematic reading to take, for example, Section A?—Tillage and crops—yes, if he had familiar personal knowledge.

15975. At any rate it is not necessary to pass through any qualifying classes of instruction in order to present oneself for an examination?—No.

15976. I think you also said that the Board of Education took no part of any kind in examinations in practical agriculture?—Did I?

15977. I took it down at the time and that is the impression conveyed, but I want to have it cleared up, and perhaps, if it is a mistake, you will correct it?—I will correct that by saying that candidates for honours in this subject have to pass the ordinary examination taken on a farm by the examiners for honours in this subject. That is, perhaps, what was in your mind.

15978. No, it was not what was in my mind. What was really in my mind was this, that the syllabus which has been issued under Subject XXIV. is divided into two sections, and it seems to me the one section is essentially practical and the other is essentially scientific—that A, B, C in fact are essentially practical and relating to tillage and crops, and to horticulture and animal husbandry; while the other three, D, E, F, are the chemistry of plants, soils, manures, crops, animals and foods, and is it not a fair division to say that one is practical and the other scientific?—Yes.

15979. And that you do conduct the examination in agriculture so far as it applies to the first three branches?—Yes, I see what you mean. In saying we did not conduct

examinations in practical agriculture, what I was thinking of was ploughing or reaping; but certainly these are practical aspects of agriculture.

15980. And the syllabus has been so arranged in fact that it would be possible for a man who has received no great amount of scientific training to present himself for your examination?—Yes, in certain sections of it.

15981. Then with regard to the remuneration of teachers who take these local classes in agriculture, rural science and the like, I presume that the teacher himself receives nothing from you, but only from the county education committee?—Yes; we pay nothing to the teacher directly, and we make it a rule that the teacher should be paid by a salary which does not depend directly on the grants that we pay, that is to say that this arrangement is not one under which the teacher will get the fees and the grants. We object to that.

15982. I suppose your grants are to a certain extent allocated according to the number of pupils that receive instruction?—Yes, they are. They depend on the number of pupils.

15983. Do you give any advantage as regards your payment to the classes that are held in thinly populated districts?—One of the objects to be gained by Section 34 as against the other Section, 32, under which these grants are payable is, that it enables us to take notice of and to give assistance in regard to the difficulties of providing instruction in thinly populated districts.

15984. You think that you do something considerable to overcome the educational distinction that exists between an industrial centre and a purely rural one?—We do something. Last winter was the first one that we had any power to do that at all. In doing so in the grants we paid in respect of last winter's work, we worked on lines which secured advantage to a certain number of pupils. This year we are doing it in an increased number of counties and what we hope is that that arrangement will gradually extend over all areas where the difficulties from sparseness of population are such as to have an appreciable effect upon the work of the area.

15985. So that this is an advantage that you give to agriculturists, if one may say so, that you do not give to those engaged in other occupations?—Yes, that is so. Of course the view is that our grants are intended to bear a fair proportion to the total expense alike in urban and rural areas. We recognise the fact that the expense of providing, say, 50 per cent. of the youth of a county with an education in the rural area is greater than the corresponding expense in the urban area.

15986. You recognise that?—We are recognising that.

15987. And you give effect to that recognition, I take it?—Yes, in the cases under Section 34. My point is that it is only within the last few years that we have had power to do so. That is all.

15988. You are at present expressing a personal opinion, possibly, and you also say it is the policy of the Board not severely to handicap youths who are necessarily removed from centres of large population, and you give them something like corresponding facilities for training themselves in agriculture?—It is not only the policy of the Board but it is the practice of the Board, and it is the advertised practice of the Board under a regulation advertised after obtaining the authority of the Treasury to do so.

15989. (By the Chairman.) What regulation is that?—That is in Section 34.

15990. (Dr. Somerville.) I daresay you know that local authorities, and of course the Board of Agriculture indirectly, are prepared to place opportunities for obtaining expert advice more fully at the disposal of the farming community than it is placed at the disposal of those following other trades and professions?—Yes.

15991. I mean to say that a farmer, whether in Scotland or in England, has the opportunity of applying to the local agricultural college or to the staff of the county, and of getting from them the best expert advice with regard to questions of cultivation and management generally that is at the disposal of those authorities?—Yes.

15992. Do you agree that agriculture should be favoured to this extent beyond other industrial occupations?—I agree that agriculture should have that facility. I am not going to say that no other occupation should have similar facilities.

15993. You do not think there is anything inherent in agriculture that should give it a preference of this kind?—

It is not singular in that respect. I could instance several other interests of that kind. But do you mean in respect of the utilisation of the natural resources of the country?

15994. I was rather wanting you to say whether that is the reason why you would do it. If so, that would be an answer to my question?—That is a political question. That is not a question for the Board of Education. It is a question for the Government. But I have always supposed that was the theory on which the special treatment of agriculture was based. I want to guard myself against saying there are not other natural productions of the country that constitute wealth that might be similarly considered. Officially, I have no opinion on the subject.

15995. We have had two reasons put before this Committee; one argument in favour of agriculture getting that advantage, both as regards education and also as regards this advice to be placed at the disposal of farmers, is that agriculture is concerned in the production of an article which is essential to the life of the people—to everyone—and the other that agriculture differs from many other industries in that the other industries produce in many cases luxuries, and therefore that there is not the same demand or need for helping them. Do you agree with those two contentions?—I do not know that I do, for, to begin with, coal is almost as necessary for the life of the people as meal. A meal is not much good without a fire to cook it.

15996. But there are other ways of getting heat besides coal?—They are not very economical. But I do not know whether cream is not a luxury, for example, looking at it from your point of view.

15997. Perhaps you know that farmers in this country generally, who have thought out the subject, are rather envious of the opportunities and facilities afforded by many other countries for education in their business, and I daresay you know we have heard a great deal of the splendid opportunities provided in Denmark, and we are constantly being reminded of what is done in Germany, and that we would all stand to gain by what is being done in the United States. Now in these countries higher technical agricultural education is controlled by boards and departments of agriculture, and not by boards of education, and are we to take it from you that these facilities of which we are all so envious would be still more attractive if they were taken out of the control of the Boards of Agriculture in these several countries and placed under their respective Boards of Education?—By no means. I am not prepared to say that at all. But what I am prepared to say is that in the conditions of public life in England the efficiency of agricultural education as a whole would be anything but promoted if it were otherwise than in the hands of the Board of Education. The conditions in other countries are peculiar to those countries. I do not think that without a very careful and elaborate analysis of each case that was used for comparison one could arrive at a fair and just conclusion on the question.

15998. I suppose, then, that you rather maintain that there are peculiar conditions, or conditions peculiar to this country, which make it desirable that the Board of Education should control all education here, whereas in other countries it is controlled not unsatisfactorily by other authorities than the Board of Education?—I have mentioned the points in which I think it is so essentially different—that the educational government of the country is distributed—with an arrangement of a central office and local bodies. This is so in England, but it does not hold good in the case of the others. In regard to the application of educational administration, the difficulties of dealing with separate sections of it would be insuperable if the technical education of each area in a section of the community were to be dealt with by a separate department.

15999. I think you have reminded the Committee with some satisfaction to yourself of the great progress that has been made in Scotland since agricultural education of the highest type has been removed from the control of the Board of Agriculture and placed along with all forms of education under the Scottish Education Department?—Satisfaction to myself only as one interested in Scotland. I have no connection with the work. The improvement has followed since I left Scotland, so that it may possibly be read in another way.

16000. When I say with satisfaction to yourself I mean you were satisfied that it is for the good of the country that the change was made?—Yes, certainly.

16001. I may remind you that time passes, and that in fact this change was made as far back as the year 1896, now 12 years ago?—Was it 1896?

16002. I was not a little surprised to find that the last year in which the Board of Agriculture administered grants to these institutions in Scotland was in the year ending 1896?—I will take that from you. I am rather glad that you have reminded me of that, because it enables me to make my case a little more plain. The Board of Agriculture work was handed over then, but the Scotch Education Department did not then administer the grants for science and art. I was at that time in Scotland, and I was one of those who felt very strongly that the educational progress of the country was seriously hampered by the fact that the Department of Science and Art, as it was at that time, having one section of the educational work under separate administration, and I was, with other people, extremely glad when the work of the Science and Art Department was transferred to the Scotch Education Department. Only, when the Scotch Education Department had the whole of the threads in its hands did Scotland really begin to progress in this matter of the application of education to the agricultural industry. That is why I rather spoke of 1900 than 1896. I had forgotten about that. I remember at that time people said—and, my lord, you will remember people saying it—that the Scotch Education Department had no interest and no sympathy whatever in the work of instruction in science and art. Those who pressed for transference said that was neither here nor there; and that the Scotch Education Department must make themselves fit to do it. It was not a question whether they had or had not knowledge or interest in science and art, but if they were to administer that section of education, they would have to have the interest in and knowledge of it. The result has followed.

16003. Which result has followed?—The improvement which was foretold from the application of science and art to the industries that pupils were to follow, and ought to be preparing to follow, has followed upon the unification of the control.

16004. Do you think that higher agricultural education in Scotland has, in fact, made great progress during the last ten years or more?—Yes, I do.

16005. I do not suppose you will be prepared to maintain that there is any agricultural college in Scotland that is better than one or two in England that might be mentioned?—No, not as agricultural colleges, but that the agricultural education takes a more real part in the general educational machinery of the country in Scotland than it does in England. That is what I am prepared to say. I do not say the individual higher colleges in Scotland are better.

16006. You think that a comparison of the progress made by the two countries during the last ten years or twelve years is in favour of Scotland, but you would not support the view that this is due, not so much to the transference of the work from the Board of Agriculture to the Scotch Education Department, as is due it in fact to the fact that the change has enabled the State to make very larger grants than was the case previously?—I have no doubt that is very much so.

16007. The grants paid to the university collegiate centre in Edinburgh in 1895-6 amounted to £550, whereas in the last year for which I have figures, which only comes down to 1905, it is £2,123?—Yes.

16008. Aberdeen has risen from £150 to £2,285, and Glasgow, including Kilmarnock, has risen from £950 to £2,957, and I believe is now well over £3,000?—Yes.

16009. You, I think, have already indicated that a great deal of the progress of unification and systematisation and general efficiency of education in agriculture in Scotland it due to the fact that it is brought into organic association with the department controlling all education, and you would say, I suppose, that in England the same progress has not been made because there have been rival authorities, to a certain extent; but may I remind you that the Board of Agriculture in England has been very seriously handicapped, and handicapped in a way that has not been the case in Scotland, by the want of funds, and that in fact institutions in England to day, which the Board of Agriculture aids, have been receiving only £1,000 for work that is in no way inferior to work that is done by a similar college in Scotland in receipt of over £3,000, and that if we had been able at the Board of Agriculture to grade up the grants in England on the same scale as in Scotland, the good work that has been done in England would have been very greatly enlarged?—Yes, that is very interesting, but there are two or three points that require to be taken into account to modify one's view with regard to it. I am not an expert in recent Scotch

Mr. F. G.
Ogilvie, C.B.

19 Feb., 1908

Mr. F. G.
Ogilvie, C.B.
—
19 Feb. 1908
—

snance, but I know enough to suggest several points. To begin with, I do not think the grant of £150 to Aberdeen in 1896 was really to this institution at all.

16010. No, it was quite separate?—Was that amount £150?

16011. Yes, to the university. However, I take it on the broad ground that Scotland is getting grants, somewhere in the neighbourhood of £3,000, for work that is precisely similar to that done in England on grants from the Government of only £1,000?—I do not think that is a fair statement. Scotland is not getting grants. Scotland is giving grants of £3,000 to that institution. Part of that money, no doubt, corresponds to the money which is given in England. But to enquire fully into that would require an investigation of the successive manipulations of equivalent grants as between England and Scotland. Scotland has no doubt denied herself many things in order to spend upon others, and it is an inaccurate assumption that the £3,000 comes mostly or comes only from a grant equivalent in source to the grant of £1,000 in England.

16012. Is it not the fact that these colleges are aided by the local authorities in the same way that the corresponding colleges in England are?—Yes, and the increase from local authorities since 1896 has been very great.

16013. Is it not a fact that in addition to the grant from local authorities the Treasury gives grants, and that the Treasury grant is, in the case of Scotland, something like three times what it is in England. Is that not a fair, broad general statement?—What you do not see is what has been paid into the pocket from which the Treasury makes that grant of £3,000 to Scotland.

16014. But after all, the work in these colleges is paid partly by local and partly by imperial contributions, and the imperial contributions are very much greater in the one case than in the other, and does that not account for the more efficient machinery and for the greater educative results in the one case than the other?—If you restricted your point to whether the expenditure of a large sum of money does not really account for it, I should say yes, but if it comes to a question of weighing the Scotch grant and the English grant, then it becomes necessary to see how far Scotland has diverted money from other purposes as compared with England to those purposes, recognising the importance of this subject.

16015. (By Mr. Medd.) Could you tell me, are you here representing the Board of Education or representing the South Kensington branch of it?—I am here by the instructions of the Board of Education to give the Committee information upon the work of the Board in relation to those questions of agricultural education with which we are concerned.

16016. Then we may take your opinions as being those of the Board of Education?—Where I have not stated them to be my personal opinions only.

16017. I quite understand. Where you hold it as a private opinion you have said so?—Yes.

16018. Can you tell me the principle upon which the Treasury makes grants to you?—The principle upon which the grants that we distribute are received?

16019. No. You get a lump sum from the Treasury?—No, we do not.

16020. How do you get the money?—We offer, with the authority of the Treasury, to pay grants upon certain principles which are set forth in the Regulations, and we draw upon the Treasury for precisely such sum of money as is necessary. If we are satisfied we may give £10 a head on every pupil in the first year's course of a technical institution, and therefore if there were 2,000 pupils we would have to give £20,000, and we should get that £20,000.

16021. Then the Treasury pays you after all?—It all comes from the Paymaster-General.

16022. Then your statement of account comes in with no specific grant to you for a specific amount?—No.

16023. In other words, every individual who desires to learn, I may say, weaving, to take a subject, and subjects himself to your Regulations, can obtain a grant for learning weaving?—The school in which he receives instruction obtains the grant.

16024. But you pay the school by the head, do you not?—In certain cases we do.

16025. Now with regard to the two Boards, you are definitely in favour of the transfer of the educational work of the Board of Agriculture to the Board of Education. I think?—That is my personal opinion.

16026. You have mentioned difficulties which occur in other countries where they have two distinct departments. Can you tell me of any difficulty, I mean to say of any situation which arises there which you believe to be different from the situation in England?—An essential difference in most cases that have been quoted is that the Government takes in the provision of education a share which may be described as more paternal or bureaucratic, according to how you look at it.

16027. I should have doubted that. Take the United States, quoted by you?—No, I did not quote the United States, I think.

16028. Take France. The administration of agricultural education is undertaken by a local authority, just as it is here—an authority corresponding to our county councils. It is undertaken in Holland by a provincial council corresponding very much to our local authorities, so that the specific difficulty which you raised as to the conflict between a central and a local authority does not appear to arise in these countries, does it?—It all depends upon the distribution of responsibility as between the central authority and the local authority.

16029. Then we come to the relationship between the two authorities. Here in England is that relationship, in your opinion, satisfactory?—That is a very large question. Do you mean the relationship between the Board of Education and the Board of Agriculture?

16030. Yes?—I am sorry I do not know what you mean.

16031. Do you co-operate entirely?—If you would give me a sort of illustration of what is in your mind I could answer better.

16032. Do you not to some extent duplicate each the work of the other?—I do not think so. There are three or four cases in which we both make grants to the same institution, and in those cases, which are very small in proportion to the whole, there may be a certain amount of duplication, but so far as can be ascertained, the amount of duplication is insignificant. So far as a wholesale duplication of grants goes, there is nothing of the sort.

16033. No, in one sense there is not; but you do admit that in the case of the Harris Institute and in the case of Reading you certainly do duplicate?—No, I do not think I said anything about Reading.

16034. No, it has not been mentioned; but Reading derives a grant from both Boards?—In the case of the Harris Institute, as I have explained, we have given a grant for many years and the grant we have given has been in respect of the scientific work relating to the agricultural course, just as another part of the grant was in the scientific work relating to the engineering course, and we have continued to do that because we have not yet (and the question has only arisen in the last year or so) ascertained quite how much we ought to do and how much we ought not. I have explained that that institution is a complex institution.

16035. The Harris Institute is?—The Harris Institute, with teachers and with classes common to different courses of instruction, is rather a difficult case.

16036. Then since you are unable to define or say exactly?—But I want to check you in that. We give no grant to Reading which has the slightest relation to work done in respect of which the Board of Agriculture pays a grant.

16037. No, but you would agree with me, I think, that your grant is a certain beneficial relief to the general expenditure of the whole institution. You cannot, so to say, earmark every halfpenny, but if you give a grant of £1,000 that to some extent relieves the agricultural people from having to pay?—Not if it is in respect of work which costs quite independently of the other work of the institution £1,500.

16038. Their principal told me he was unable exactly to distinguish between the two?—But we might be able to, though he was not.

16039. Yes, that is a point I would not press, but that is an institution in which to some extent you are covering the same ground?—No. There I differ. I consider that it is in no case a question of our covering the same ground as the Board of Agriculture.

16040. Then since you are unable or unwilling to define the relationship between the two Boards?—I am neither.

16041. Then what is the relation to-day between the two Boards?—I do not understand what you mean by the relation.

16042. The relationship between the two Boards is the sphere of work of the two Boards. What is their sphere of work, and how far do they join, and what are the points both meet at, and what do you consider your sphere, agriculturally?—The Board of Agriculture's position, as I understand their sphere, is that in so far as they give grants they give grants in aid of institutions of the type or grade of university colleges or otherwise for work in which the students are giving their time to an advanced course of study definitely related to agriculture—students beyond the stage of secondary school students and whole time students.

16043. Not necessarily?—You have asked me for my definition, and that is what I am giving. All other agricultural education is agricultural education, in respect of which we are bound to give such grants as we are enabled to give by Parliament. Perhaps you will allow me to supplement that answer by saying that I understand the Board of Agriculture and Fisheries make grants for the development of higher agricultural teaching such as would be appropriate in university colleges and institutions of a special character. To prevent any misunderstanding, may I say that that definition is taken from a letter written by the Secretary of the Board of Agriculture.

16044. Do you believe it would be impossible to define the respective spheres of work as definitely as they are in France and in Holland?—Nothing is impossible.

16045. Do you believe it is difficult?—Difficult and inexpedient.

16046. You would desire, of course, as you have admitted, to have the control of the whole of agricultural education?—I object to the word "admitted." I do not like the word "admitted" when it simply means stated.

16047. Stated then?—Yes.

16048. Are you of opinion that the Board, or rather the Department of Education, has throughout its existence done its agricultural instruction satisfactorily?—I consider that the Board of Education throughout its existence has taken steps proper to the circumstances of the time towards the development of the agricultural work with which it was charged.

16049. Then are you aware that one of the main reasons for the formation of the Department of Agriculture was the inefficiency of the work done by the Department of Education?—The Board of Agriculture was formed before the Board of Education.

16050. But are you aware that one of the reasons for the appointment or formation of the Department of Agriculture was the inefficiency of the work done by the Board of Education—by the Science and Art Department?—My statement a few moments ago as to the efficiency and as to the method and the manner in which the Board of Education have done their work was in answer to your question relating to the Board of Education.

16051. I said advisedly Department or Board?—I doubt very much if you did, but accepting the fact that you did, my answer refers solely to the Board of Education since its establishment as a Board of Education.

16052. Then prior to this you think that the work done by the Department of Science and Art might be unsatisfactory?—I have already stated at some length my views as to that work. I do not say that it was unsatisfactory. I say that the work did not produce the results that it was desirable to see produced. How far the absence of proper results was due to the want of satisfactory work or the want of satisfactory information at the time, I am not prepared to say.

16053. But you are aware that dissatisfaction with the work was one of the causes for the formation of the Board of Agriculture?—One of the assigned reasons, yes.

16054. In the departmental inquiry?—Very likely.

16055. Now to pass to quite a different matter. In regard to the training of teachers I suppose you do not, or I am not sure if you do, advocate any differentiation between the training of the urban and the rural teachers?—During the period of two years, which is the normal course of training for an elementary school teacher, I think that a further stage of specialisation than that which I have already indicated is not desirable.

16056. And you would probably agree that the paragraph relating to what one may call nature study in the Memorandum to the Regulations really covers all that is needed for the training of a teacher for rural purposes?—I have not given sufficient attention to it to be able to give a direct answer to that question—not to that particular section of the work, that is.

16057. Then with regard to the elementary school, it has been mentioned in reference to the Board of Agriculture, and have you ever heard any suggestion that that Board of Agriculture should become responsible for any elementary school?—No.

16058. Of course, in your work at the Board I take it for granted that you use every effort to supply every need; and is there a single rural higher elementary school?—You made a large assumption in saying that we made every effort to supply every need.

16059. I took it for granted?—That is too much. We make every effort we can, but that is a very important limitation. The higher elementary school for rural education and its possibilities in rural areas have not been appreciated for a sufficient time yet to admit of the establishment of such schools on a considerable scale. Personally I hope to see a very considerable number of them presently, but that takes time.

16060. Now in regard to the elementary school again would you suggest any attempt to teach anything of a definite agricultural character?—It is so difficult to understand what you mean by the question. If you will tell me the sort of thing you have in your mind, I will answer you.

16061. Then I would say what is your opinion in regard to an attempt to teach technical instruction in agriculture?—Still I am a little in the dark. Do you mean ploughing?

16062. Technical plus the business of farming, and so on?—I have already gone into that pretty fully, and I do not think I can add anything illuminating on it.

16063. I was not clear from your answer whether you believed in the possibility of giving a rural bias or the desirability of giving a rural bias to the elementary school. —I do not think it is worth while trying to teach a boy of eleven to comb a horse in an elementary school, but I do think it is worth while teaching a boy of eleven to distinguish a horse from an ass, and to recognise the relation between the different types of animal that are found in his neighbourhood, and that it is possible and beneficial to teach him something about plants and to teach him something of their modes of growth, and to give the instruction upon modes of growth, with definite relation to the plants that are likely to be of importance in farm work.

16064. But do you mean to teach all those subjects from the educational and not the technical standpoint?—Yes, exactly.

16065. You do not, I take it, desire to give a rural or an urban bias to any school?—I desire to see a rural bias in every rural school, and an urban bias in every urban school.

16066. You would?—Yes.

16067. I disagree with you entirely.—I am sorry that my powers of explanation have been so deficient as not to have made that plain hitherto.

16068. You do not believe in treating subjects on the principle of equilibrium and without any bias, having regard to the infinite variety of pursuits which the children must inevitably follow. You prefer trying to influence them in a specific direction by bias?—No, that is speaking from a wrong point of view. I have been endeavouring to expound my position for several hours, and I may say that my point of view is that I would give a rural bias in rural schools, because I could secure a better education through matter with which the pupils are presumably familiar from every day contact, and not necessarily because the great majority of them are going to be employed in connection with these matters, but certainly with some knowledge that the great majority are so to be employed; and because of that certainty I should make teachers more able to use as fully as possible objects of rural interest in developing the intelligence of, and generally educating, the pupils.

16069. Would you be surprised to hear that a better agricultural labourer could be procured from Bellenden School here in London than from any village school?—I should.

16070. Then in regard to secondary schools, do you advocate any specific rural bias in the secondary schools?—I have already gone into that very fully.

16071. No, I think not. I think you said, if I may say so, that subjects bearing upon rural life might with advantage be taught. That we all accept. The question is whether the schools should have a rural bias, or whether they should preserve a strict equilibrium, as I have said?—I have explained that the precise course in the secondary

Mr. F. G.
Ogilvie, C.B.

19 Feb. 1908

Mr. F. G.
Ogilvie, C.B.
—
19 Feb., 1908
—

school should depend on the circumstances of the school. If it is a small school in a limited area entirely rural the probability is that the school would only, as a secondary school, run a three years' course, and the majority of the pupils remaining in it being eventually intended to pass from the school to rural occupations, the work of the final years at the school should have that in view; but as it is a secondary school, and intended to give them a wide outlook, it should not be restricted in any sense by a definitely economical view of agricultural interest.

16072. Have you had any experience of agricultural sides attached to secondary schools?—Personally?

16073. Yes.—No; but I have had experience personally of pupils in a secondary school with a side common to all who are going to follow technical pursuits, and in which a considerable proportion were destined to work in agriculture, and subsequently did excellent work in agriculture.

16074. You do not think their general education suffered?—I think their general education benefited.

16075. Then assuming that your Board took over the whole of this agricultural education, do you think you would be prepared to do for it what the Department in Ireland can do?—No.

16076. You do not think that?—No, because the Department of Agriculture and Technical Instruction in Ireland is a department not merely for agricultural education but for the developing of the agricultural industry in Ireland, which is a very much wider view of the thing, and a much wider view of its responsibilities than the Board of Agriculture in England has in that respect.

16077. Then you consider so far that you are at present doing all the educational work with the exception of the higher agricultural college work?—I consider that we have a programme of encouragement and aid which is capable of development in such a way as to cover the great bulk of the field in the direction of agricultural education. I should be very unwilling to say that that programme is complete, or is entirely satisfactory, or will not require modification almost annually in the light of experience.

16078. But you do not recognise any educational work as done by other Departments of the State? I mean of the advanced agricultural colleges of which we spoke?—I recognise that they are valuable.

16079. Do you recognise any educational work done by other Departments of the State?—I recognise its value.

16080. Do you recognise that any other Department of the State does educational work?—Yes, certainly. The Agricultural Colleges.

16081. I meant the existing advanced agricultural colleges.—You put a very general question. The Home Office educates, or gives grants to certain classes of education. That is educational work. The Army maintains Army schoolmasters.

16082. But my point is this, that the attitude which I think you take up is that all education should properly be under one Department of the State, and I merely wish to point out to you that other Departments of the State are already doing very valuable work?—Yes, I was talking in a very general way. I certainly never referred to gaol schoolmasters nor Army schools.

16083. There are the Home Office schools and Navy schools under the Admiralty. You have taken no account whatever of that?—But those schools are all schools, say, within the Admiralty and the War Office—they are within cantonments. They are under the Navy Department, and there are similar circumstances in each case almost.

16084. But that shows that other Departments of the State can do efficient educational work?—I never questioned that.

16085. In regard to the Board of Agriculture, no mention to-day has been made of their leaflets, which have had the most valuable educational effect with the lower class of farmer?—Most valuable.

16086. I mean that ought to be recognised in speaking as to its work, or the transfer of its work?—I was not speaking as to its work. I have not attempted to assess the value of the work of the Board of Agriculture in education in any sense, otherwise I should have had to say a great deal more than I have done.

16087. (By Professor Middleton.) With reference to the examination you have just had from Mr. Medd, there is one question I ought to ask you. I recognise it is your personal opinion that the work of agricultural education would be more conveniently dealt with from the adminis-

trative point of view if all were done under the Board of Education; but assuming that the system at present in vogue were continued, do you see any serious difficulty in the two Boards working in harmony in future as they have done in the past?—I see no difficulty at all. But may I point out one thing in the way of serious business, that is, that the real distinction is that in educational work, that is the educational work of these institutions, the grant of the Board of Education is an automatic grant, and depends on the work done, and so on. The Board of Education could not conveniently assess, and it would be outside its function to assess, the value of the experimental work and of the consultation work, and that sort of thing, of an institution as a centre of agricultural research, or the application of research with a view to the interests of an industry in regard to any particular locality. That I regard as pertaining essentially to the Board of Agriculture. The only section of their work, I think, that should as a matter of national organisation be more properly classed in the Board of Education is their purely educational work.

16088. I recognise the difference you have pointed out between the systems of this country, of England especially, and foreign countries, but in looking at the system of agricultural education just now adopted both in Prussia and in the United States, I find that there no practical difficulty seems to occur in administration through the fact that the work is divided to some extent between their Departments of State corresponding to our Boards of Education and Agriculture. It seems to me that if it is possible to develop, as have been developed, very perfect systems in the countries which I have named, under the dual control of Education and Agriculture, it ought also to be possible to develop a suitable system in England, in spite of the fact to which you drew attention of the special local conditions in this country. I cannot see any difficulty?—I must say that I have a very strong feeling that the fewer Government Departments the local authority has to deal with upon a particular subject the better. The administration is much simpler if they have to deal with one for all their educational work, and another for all other work of a particular character. There are constant misunderstandings locally where you have got more than one authority.

16089. I agree that there is something in that point of view, but on the other hand there is, I think, a great deal to be said on the other side. You state it as your opinion that it would be a great mistake to separate educational committees in the counties into two distinct committees, one dealing with agricultural education, and the other dealing with general education?—Yes.

16090. But would you consider it desirable that education committees should appoint special sub-committees to deal with the question of agricultural education?—No.

16091. You would not?—No, I think that would be no good.

16092. Is not that the common practice?—It is the common practice.

16093. In fact, all the practical work of the Education Committee is done. I think you will agree with me, by sub-committees?—Yes.

16094. Would it not be possible, therefore, just as you divide up education under local authorities among sub-committees, to separate their work in such a way that the work done by certain sub-committees should be under the inspection of the Board of Education while that done by the agricultural sub-committee was more directly controlled by the Board of Agriculture?—Yes, the work done by the Board of Agriculture Education Committee would be nothing. It is the work done by the Education Committee under the advice of the Agriculture sub-committee, and that makes all the difference, because you get the united control, which you do not get if you separate the two.

16095. I quite see that point. Of course the unity of control comes nominally from the Education Committee; but the Education Committee always acts according to the advice of its sub-committee, or almost always so?—Upon agricultural questions.

16096. And also upon other educational questions which it delegates to the sub-committee?—Yes.

16097. So that it does not seem to me the administrative difficulty is a very serious one?—The work done under the advice of the Agricultural Committee is not segregated. Much of that work is and ought to be entirely worked up and worked in with other work done under the direction of the same Education Committee, and you cannot separate it, for it may be done by the same man. He may do in the same room work in the interest of the agricultural

sub-committee and work in the general interest. That is my difficulty.

16098. It seems to me very important indeed, since so much power has been given to the local authority in England by the State, since almost all control has been given to it in the matter of rural education, that the local authority should have at its disposal the very best technical advice which the State is able to give, and it seems to me that for that reason, when we come to deal with questions which are purely agricultural, it would be better if the local Education Committee were in direct touch with the Board of Agriculture rather than in direct touch with the Board of Education?—Of course you rather evade the question by ignoring the distinction between agriculture and agricultural education. The point is that for the great volume of the work the local committees have to supervise it is work in preparation for the practical work of agriculture—as distinct from the higher scientific aspect of agriculture which is work upon which expert opinion can be obtained readily. So far as it is expert matter the method of communicating instruction is educational matter. Neglecting this distinction you might just as well say in the teaching of physics all the teaching of physics in the secondary schools ought to be done under the direct authority of the Royal Society, we will say; whereas it is really not physics but the teaching of physics, that is the difficulty in that particular matter.

16099. Of course the real problem, as I think you have said in discussing the question already, is the problem of the teacher?—Yes.

16100. And the finding of the teacher?—Yes.

16101. It has always seemed to me it must be of very great importance for the teacher as a teacher to be in direct relation with that Department of the State which deals with his own particular subject, rather than with a Department which does not deal with his subject, but with instruction?—Teachers in the higher grade of the work certainly have a definite advantage to look to in that relation. The teachers who are at the distal end of the organisation really have to derive their inspiration from intermediate guides; and I do not think that as far as the teacher's knowledge of his subject is concerned it is of very much importance which central State Department he works under.

16102. Could you explain footnote on page 13 of your Board's publication "Regulations for Technical Schools": "The payment of grants, under this chapter, to institutions which form parts of Universities or University colleges may be subject to reconsideration in view of the allocation of the Treasury grant to University colleges." Are there Departments other than agricultural in these colleges which have been receiving grants from the Board of Education?—Yes. Take Leeds, for instance.

16103. The Harris Institute then is not a single case?—The Harris Institute is not a University college.

16104. But it is not a single case of a complex problem?—No. We have given as yet no grant to any Agricultural Department in a University College in receipt of aid from the Treasury University College's Grant. But in Leeds University we have given aid to, say, the Weaving Department. That is the sort of thing.

16105. Does this mean that you now intend to withdraw your grant from the Weaving Department at Leeds because of the Treasury grant to the University?—No, it means that when the Treasury grants to these colleges have been revised, then it will be for the Treasury and the Board of Education to deal with the grants under this chapter without any question of vested interests.

16106. Just as it might be possible in giving a grant in connection with the Board of Agriculture to deal with the question?—Yes, that is so.

16107. Then you referred to the revision of the syllabus in the Principles of Agriculture, by a special committee of the Board?—A special committee of our Board. Shall I give you the names?

16108. I have an indistinct recollection of doing something on that syllabus. Was it compiled by the Agricultural Education Association?—No. Every now and again we revise the science examination syllabuses, and we get our advice, in revising them, from people who know something about the special requirements of the case. Take last year; we had the Building Construction syllabus under consideration and we got together two builders, two teachers of building construction, a professor who had dealt with engineering subjects, and two officers of the Board who had been interested in the particular subject, and they revised the work.

16109. That is the syllabus which was originally prepared by the Agricultural Education Association, and has since

been revised by your Board?—One of the Assistant Secretaries of our Board, with the assistance of Mr. Warrington, and I think in consultation with Professor Somerville, was on the Committee, with Professor Miall and Mr. Hall. That was the Committee. It was before I came in. I mean we took steps, as the usual practice is, to get on the committee the best men we could to advise us about these syllabuses.

16110. (By the Chairman.) This Report on the Universities and University Colleges is in answer to a circular which is sent to them to fill in?—Yes.

16111. But none of these colleges are inspected by the Board of Education?—No. The circular is sent out and the replies to the circular form the subject of correspondence between the Board and the colleges until we get the material in a sufficiently clear form for publication in the Report.

16112. But you do not inspect these colleges?—No, the colleges are inspected at the instance of the Consultative Committee of the Treasury every five years.

16113. Therefore your relation with these colleges is simply for the purpose of collecting this information?—That is so.

16114. Now I want rather to ask you how practical effect could be given to your view that the various local educational authorities should be unified—because that is really what you think—that it would be better if they were encouraged and guided by one central department instead of by two departments?—Yes.

16115. I understand your point of view, but how is that possible? Lord Barnard has already alluded to it but I want again to emphasise it. This Act of 1889, constituting the Board of Agriculture, is very explicit. It states that the Board of Agriculture "may also undertake the inspection of, and reporting on, any schools which are not public elementary schools." Therefore the secondary schools are not out of their purview, and in regard to schools in which technical instruction, practical or scientific, is given in any matter connected with agriculture or forestry or which admit that inspection the Board is qualified. These powers you will admit are very wide, and there is certainly no legal objection to the Board of Agriculture undertaking operations distinctly allowed by the Act of Parliament?—No there is none.

16116. I think you will admit that?—Yes, I will.

16117. Now that points to the great need there is of some understanding between the two departments. It is quite obvious that under this Act and considering the powers which you have and under which you issue your regulations there is not only as we have pointed out, a danger of overlapping but there is a danger of positive friction. Let me for instance submit to you this point. You will admit that the Board of Agriculture would be perfectly justified in issuing any day a report like this one of Mr. Dymond's by one of their experts or inspectors, containing suggestions on rural education with specimen courses of nature study, gardening and rural economy. Now what would be the position of a County Council receiving this document from the Board of Education, although I understand it does not represent the definite views of the Board of Education, and is not an official document of the Board of Education, but Mr. Dymond has been allowed to publish it?—No, it is an official document of the Board of Education.

16118. You consider it does represent the views of the Board of Education, because I want to know that exactly?—The relation of the views of the Board were stated in the preface. It says this on page 2: "While inviting serious attention to Mr. Dymond's memorandum, the Board must not be thought necessarily to endorse every suggestion it contains."

16119. There is nothing to prevent the Board of Agriculture publishing a similar document, saying "While inviting serious attention to Mr. N's memorandum they must not be thought necessarily to endorse it." Therefore it is quite clear that the County Council receiving the advice from two quarters would be placed in rather a curious position, and there is nothing at this moment to prevent this. Is it not, therefore, desirable that before further extension is given to the number of your officials and to the expansion of your control in the agricultural sphere, that you should come to some understanding with the Board of Agriculture, as we all look forward to a great expansion of agricultural education. We look forward to the increase of the winter schools; we look forward to the increase of the dairy schools; and we look forward to the expansion of schools such as Basing. Therefore

Mr. F. G. Ogilvie, C.B.

19 Feb., 1908

Mr. F. G.
Ogilvie, C.B.

19 Feb..1908

you will admit that there will also be required an increase of the personnel?—Certainly.

16120. Either under the one or under the other department?—Certainly.

16121. And therefore it will be absolutely necessary to determine under whose guidance (I use your own words, I think) county councils are in future to work—who is to give them the advice?—I agree generally as to that, but I want to remind you that while it is the case that there are no legal difficulties, as far as the Act of Parliament is concerned, in the Board of Agriculture doing just what you have said, that is considerably qualified for practical purposes by the fact that Parliament has assigned to the Board of Education the authority and the power and the duty of aiding by grants much of the instruction which is described under the section of the Act of 1889 which you read, and that as a matter of fact the question of the delimitation of duty between the two Departments has in the past formed matter of just such consultation as you suggest, and in a passage from a letter of Sir Thomas Elliott's, which I read lately, the matter is set out. This is the letter in which the result of the communication really was specified. This is a letter dated the 10th of January, 1905, from Sir Thomas H. Elliott, to the Secretary of the Board of Education, South Kensington, saying: "I am directed by the Board of Agriculture and Fisheries to state for the information of the Board of Education that the Board think that the understanding arrived at by Sir William Abney and myself in 1903, should still govern the distribution of grants to agricultural colleges and schools, and that the Board of Agriculture and Fisheries should make grants for the development of higher agricultural teaching such as would be provided in university colleges and institutions of a special character, leaving to the Board of Education the duty of subsidising agricultural schools, where the instruction was generally of a secondary school character, and evening schools with classes in agricultural science and rural economy. The Board do not think that any practical difficulty is likely to occur in connection with this arrangement. They publish annually a detailed Report," and so on. So that you see we have arrived at a working rule which is quite sufficient pending the arrangement in reference to the suggestion as to the Board of Education Act, of 1889, that a transference of powers of education from the Board of Agriculture should take place. So long as that does not take place we have this working agreement and that is what we have been going on with all these years.

16122. Now I want further to ask you whether you are not prepared to admit that there is some force in the argument that there is an advantage in retaining certain powers in the Department which has for one of its objects, as the Act of 1889 says, with reference to the Board of Agriculture, the making or aiding in making inquiries, experiment and research, and collecting of such information as they may think important for the purpose of promoting agriculture? The Board of Agriculture is to a certain extent in the position of promoting the industry, and the Irish evidence shows that the connection between the promoting of the industry and the promoting of agricultural education is so close that we experienced considerable difficulty in getting from the Irish Department the figures of what was devoted to promotion of the industry and what was devoted to promotion of the education. That seems to me to be a very important point; that the Department in the State which is closely connected with the people who represent the industry, and is therefore always in touch with and knows their needs, should have the control of the institutions for their education. That applies, as I need not tell you, more and much more to these practical schools, to what you would call schools giving the lower forms of education even, than to the higher, those of a university type—that applies to winter schools, to dairy classes, and even to such things as thatching and hedge cutting, and so on. I merely ask you to consider the importance of the Irish experience, and I think I may add also the experience of other countries which have an Agricultural Department. It is the special nature of the industry, the special nature of the instruction to be given, which makes it so desirable that one department should be in touch with the representatives of the industry, and also in touch with their education?—I quite recognise that.

16123. I hope you admit the force of that?—Yes.

16124. Because, as you see I have admitted to you that it is of great importance that the county councils should have guidance not from two sources, and that there should not be a dual control?—Yes.

16125. But that leads me to express the hope that the two departments will go over that ground again. The

letter you gave was written in 1905, showing, therefore, how the necessity was felt of drawing together. But the question is whether as the result of this Committee you will not be prepared to go into it again?—I ought to say that I quite recognise the advantage of making the connection between the work of inquiry and of experiment and research, and so on, for the promotion of the industry, on the one hand, and of the education of those who are engaged in the industry, on the other, as close as possible. That is an advantage in the direction you indicate but the point is that the advantages in the other directions are in my opinion greater, and that this connection between the education and the promotion of the industry, by inquiry and otherwise, is a relation which is comparatively easy to maintain, although the two are under separate Departments. It is a relation which does not cause any separation of duties in the local administration of the industrial work, because that is separate from the local administration of education, and the two things can be worked into one another, and the needs, too so to speak, quite well, although the education is under a separate head.

16126. I understand that Sir Thomas Elliott's letter was written with the object of making it clear that all agricultural education, other than in elementary and secondary schools, should be under the Board of Agriculture?—Quite the contrary.

16127. That is not so?—No. Shall I read the letter?

16128. Yes.—The letter is as plain as it can possibly be. It says: "that the Board of Agriculture and Fisheries should make grants for the development of higher agricultural teaching such as would be provided in university colleges and institutions of a special character, leaving to the Board of Education the duty of subsidising agricultural schools, where the instruction was generally of a secondary school character, and evening schools with classes in agricultural science and rural economy." That is the definition.

16129. (By Mr. Medd.) If I may say so, that rather confirms what Lord Reay has just said. Sir Thomas Elliott differentiates between colleges or institutions of collegiate grade, and then he goes on to say "and others." He gives two kinds at the beginning, the higher and the lower?—That is how you read it.

16130. (By Lord Barnard.) May I point out that this memorandum of Mr. Dymond's does deal distinctly with the agricultural colleges of University standing?—Yes, but that is the specimen course.

16131. (By Mr. Medd.) Sir Thomas Elliott in that letter distinctly refers to schools of different grades which are to be recognised as under the Board of Agriculture. Then he goes on to say that schools of a secondary character, that is, secondary schools, are under the Board of Education?—I am afraid I cannot read that into it. May I read the words again?

16132. Yes.—It says: "that the Board of Agriculture and Fisheries should make grants for the development of higher agricultural teaching such as would be provided in university colleges and institutions of a special character." That is higher agricultural teaching, such as would be provided in university colleges and institutions of a special character. Now the next case is indicated in these words "leaving to the Board of Education the duty of subsidising agricultural schools, where the instruction was generally of a secondary school character, and evening schools with classes in agricultural science and rural economy."

16133. (By the Chairman.) You do not disagree with this, that although there is this letter, there are constantly questions coming up which make it desirable that there should be, as between the Board of Agriculture and the Board of Education, an understanding from time to time as to what is within the purview of the one and of the other?—If it is necessary to revise the existing understanding there is no doubt at all the Board of Education will be delighted to discuss the matter with the Board of Agriculture and to revise things in whatever direction they find to be most desirable. I should point out, however, that the correspondence to which I have just referred followed on an interview I had with Sir Thomas Elliott in January, 1905, and that the understanding then arranged was clear and simple. It was in direct continuation of the arrangement made a couple of years before through my predecessor. It has formed the basis of our action in dealing with all schools related to agriculture; and, as I have already explained, it is perfectly satisfactory as a working arrangement, cases which present difficulty in its application being extremely rare.

Mr. H. S. LAWRENCE, called and examined.

16134. (*By the Chairman.*) You are Director of Agriculture in Bombay?—Yes.

16135. Perhaps you would give the Committee some information about the organisation and the Budget expenditure of the Department of Agriculture in India?—It is only within recent years that the Department has been established on any large footing, but within the last two years the Secretary of State has sanctioned an expenditure amounting to £160,000 a year, of which £16,000 is spent by the Imperial Department directly on a Research Institution at Pusa, in Bengal, and the balance is distributed between the several provinces of India. The grants vary from about £17,000 to some of the smaller provinces to £23,000 to the larger. I suppose you would prefer I should speak in pounds rather than in rupees?

16136. Certainly.—Then in addition to this Imperial Budget expenditure, each province spends a certain amount from provincial revenue. How much that is in each case I cannot say, but in Bombay we have been spending about £12,000 extra.

16137. How much do you get from the Imperial grant?—£23,000.

16138. Therefore you have about £35,000?—Yes. £23,000 from the Imperial revenue and £12,000 from the provincial revenue. That is not a settled grant in perpetuity, because at present we are spending large sums on purchasing farms and a site for the college at Poona, and the buildings of a very large institution that we are putting up there. What the annual expenditure will be I do not know, but I should not think it will fall below £30,000 to £35,000 for the Bombay provinces alone.

16139. Your college is at Poona?—Yes.

16140. How many European teachers have you at the Poona College?—Three.

16141. In what branches?—There is a professor of chemistry, who is also the principal, a professor of botany, and a professor of agriculture.

16142. And attached to the college there is a farm, is there?—Yes.

16143. Do the students work on the farm?—Yes.

16144. The number of the students is on the increase, is it?—Very largely. Agriculture was included as a branch of the College of Science previously which used to be looked after by one European officer, who also had to supervise all the agriculture and agricultural conditions of the whole Presidency. So that the amount of time he could give to instruction was very little. The system was not very popular, for various reasons, and we only had about five students in the college five years ago. Now there are about 30 to 40 who enter every year, and as there is a three years' course we have at present 95 students.

16145. Amongst those students are there any sons of practical farmers, or rayats?—Yes, there are a considerable number.

16146. Their object is to return to cultivating the soil, is it? They are cultivators?—I think they would prefer to have Government employment, but I have known one or two cases where big landholders have proposed to put their estates under the care of these men.

16147. That will be, of course, a gradual and slow development?—Yes.

16148. We have heard that some zemindars prefer to have the advantage of trained natives to look after them properly?—Yes, in these cases they were money lenders who lately acquired the estates, and, knowing nothing about agriculture themselves, they preferred to employ these men.

16149. Then as to the kinds of employment that they get under the Government, will you describe that?—There are two departments. There is the Revenue Department and there is the Agricultural Department. In the Agricultural Department they would begin at a salary of £2 a month, which is considered adequate, and they would be put in charge of the farm—not immediately, of course, but they would be trained to be in charge of our farms. We have 13 farms.

16150. Thirteen farms which are owned by the Government?—Yes.

16151. In various parts of the Presidency, that is?—Yes.

16152. And of different types of agriculture?—Yes.

16153. (*By Mr. Lamont.*) All in the one Presidency?—Yes. I am speaking of the Bombay Presidency only.

16154. (*By the Chairman.*) At the head of the farm there is a native assistant?—Yes.

16155. What is he called?—A farm superintendent.

16156. But he is a native?—Yes, and his salary would be from £60 to £100 a year.

16157. Then you have got the circles?—Yes.

16158. The Presidency is divided into two circles, is it not?—Yes.

16159. At the head of a circle there is a deputy director?—Yes.

16160. What are his duties?—He has to look after the farms. Our divisions are one of the Province of Scinde, and the other the Proper Presidency, and, as you know, they are very distinct. They would look after the farms in the two distinct divisions, and they would have to examine the conditions of agriculture generally, and would be called upon to report upon such questions as the advisability of the construction of canals through a certain area, and of the tracts which it would be advisable to take the canals through.

16161. Do the natives come to these farms to see what is going on there?—Most of these farms have only been started within the last three years, so that they have not yet become widely known, or gained very general confidence.

16162. But that is the object?—That is the object.

*16163. The farm is an object lesson?—Yes, certainly, and in some cases the natives do come, and they have obtained real benefit from seeing the operations on the farms.

*16164. Of course, these demonstrations which you carry on must be very carefully carried out, so that, as regards the small holder, you must take into account what his means are, and what the means of the small cultivator are to carry them out, because we know they are mostly small cultivators?—Yes, certainly.

*16165. Experiments are also carried out on the farms, I suppose?—Yes.

Mr. H. S. Lawrence.

19 Feb., 1908

*The following notes, supplemental to the above answers, were received from Mr. P. J. Mead, Acting Director of Agriculture and Co-operative Credit Societies, Bombay, successor to Mr. H. S. Lawrence:—

16163-5. The main object at these stations or farms is to conduct experiments, and the bulk of the present expenditure is devoted to experimental work and scientific research. The present accepted view is that experiments should be carried out at the Government stations and demonstrations mainly on private lands; but except in the new irrigational tracts there is not at present much that can be usefully demonstrated to the rayat.

Mr. H. S.
Lawrence.

19 Feb., 1908

16166. Of course, co-operation is yet, I suppose, quite in its infancy?—Do you mean the co-operative society?

16167. Yes.—It has not made a very large start in the Bombay Presidency, but I think Mr. Moreland will tell you they are doing very well in his province.

*16168. Then with regard to agricultural banks, what is the present development of that subject? Is it making much progress, or has it made any progress?—I am afraid I am not able to answer that question. It has been outside the line of my work. Now the agricultural banks are placed under the supervision of the director of agriculture.

16169. They are now?—They are now.

16170. Is there a Provincial Act?—No, there is a universal Act for all India.

16171. Was that passed under Lord Curzon?—Yes.

*16172. Will the agricultural banks be more or less Government Banks, like the Postal Savings Banks?—This is a subject I am not sufficiently acquainted with. Mr. Moreland knows about it. They were not under my supervision when I was there, but they are under the director now.

16173. Then, of course, your department deals with everything connected with insects and plants, and the various things which are damaging to agriculture?—Yes.

16174. I suppose at Poona there is a good laboratory?—Yes, a chemical laboratory. They have got a temporary one, but they are building a very good one.

16175. And bacteriology would come in?—That will come in the future. At present we have not got a bacteriologist.

16176. But that will come?—I hope so.

• 16177. As showing the importance which the Government attach to agricultural education, every officer of the Indian Civil Service is now required to study the elementary problems of Indian agriculture during a short stay at Poona?—Yes.

16178. Every civilian?—Yes.

16179. Can he take that at any time of his career?—No, he is required to do it within the first year.

16180. How long does he stay?—Six weeks. For six weeks he is at Poona, but only three weeks of that are specially devoted to agriculture.

16181. What is done in the other three weeks?—Survey operations.

16182. That is to give him some knowledge of the subject?—It is very short. It gives him an elementary knowledge of what is being done.

16183. Then the officers who are appointed as directors of agriculture are encouraged to come to England in order to attend some of the courses at the higher agricultural colleges here, are they not?—The present director in Bombay has just been here. I do not know of any other director now in India who has.

16184. The present director, the one who has just been appointed, was encouraged to make use of his leave for that purpose?—Yes, he was given special terms.

16185. Where did he go to?—Bangor.

16186. Then you wish that more information were available in English agricultural colleges regarding tropical agriculture?—Yes.

16187. You think that in the Universities of Cambridge and Edinburgh readerships should be established in tropical agriculture?—Yes. A suggestion to that effect has been made by an Indian officer who is at present home, looking into the matter of agricultural education.

16188. At present is tropical agriculture not taught anywhere?—I understand it is not.

16189. Then it would be desirable to obtain someone who had been trained in India, who had Indian experience?—I should think it would.

16190. Now those who have the diploma are eligible for the revenue service?—Yes.

16191. That was brought about in recent years, was it?—Yes.

16192. How long ago was that?—Four years ago about.

16193. That applies to natives?—Yes.

16194. And also to the provincial service?—From those posts they would rise up into provincial posts of deputy magistrates and collectors.

16195. They can rise from the inferior to the other services by further examination?—Yes, and by good work.

16196. Then the Government are fully alive at the present moment to the importance both of improving the teaching of agriculture and of finding employment for those who, at those institutions, have obtained a diploma?—Yes, they are.

16197. The Forestry Department is a special department, and I shall not ask any questions about that?—That is so.

16198. (By Lord Barnard.) Did you state that the supply of teachers is principally from this country?—The superior teachers are three, but for the 90 students there are about five assistant teachers, who are all natives of India.

16199. Are they trained in this country or in India?—In most parts of India such men have been trained in India; but in Bombay we have sent home three men to be trained at Cambridge with a view to filling such appointments.

16200. In fact, you do consider that such institutions as Cambridge are almost essential to provide, at any rate at the present time, a supply of teachers for such institutions as yours?—Yes, certainly. If it had not been for the supply we got from Cambridge and Edinburgh we should not have been able to start our Agricultural Department as we have done.

16201. Have you anything to do with the engaging and the appointment of those teachers?—No. Do you mean the English teachers?

16202. Yes.—I discovered, and was instrumental in securing one man.

16203. I wanted to know what your experience was; whether you found an adequate supply of teachers, or whether there was a difficulty in getting them?—That I cannot say. They are appointed by the India Office here. Sir Thomas Holderness selects them.

16204. (By Mr. Lamont.) Is there a Minister of Agriculture for the whole of India, as well as a Director of Agriculture for each Province?—The man who corresponds to the Minister of Agriculture would be a member of the Viceroy's Council. Then there is an Inspector-General for all India. He is a purely advisory officer, who informs the headquarters in the Secretariat at Simla. He is sent to inquire into special problems in the different parts of India, and he gives the results of his inquiries.

16205. Would it be any part of his duty to co-ordinate the work?—Yes; but he has no control over the several provincial departments.

16206. Lord Barnard asked you about the training of native teachers; is there any special institution for the training of native agricultural teachers?—It is intended that those shall be trained at the Research Institute at Pusa; but the working of that institution has not yet been perfected, and our best men in Bombay have really done their training at our farms under Mr. Mollison, the present Inspector-General of Agriculture.

16207. You said that on the 13 farms there are experiments conducted?—Yes.

*The following supplemental notes were also received from Mr. P. J. Mead:—

16168. The co-operative movement has made a good start on sound lines in Bombay, though not so advanced as in the United Provinces. In certain districts successful banks have already induced imitators, and with more capital the movement is certain to spread. Some capital has been made available through a Central Bank in Bombay of which the Hon. Mr. Vithaldas Thackersey is the moving spirit, but many competent observers hold that at this stage more capital is the chief want, so as to enable new banks to show that they can successfully administer moderately large sums. Questions of Agricultural Banks proper, for the purposes of financing (1) special crops, such as sugar cane, and (2) co-operative societies, and offers of assistance from such bodies as the Salvation Army, are among the questions at present under consideration.

16172. Development of these banks may be expected, as stated by Mr. Moreland, on Raiffeisen lines, and Government control must be closely limited to the necessities of the case, such as the giving of advice and auditing accounts.

Government registration, with its few attendant privileges, follows on approval of the bye-laws submitted by any new society desiring registration.

Mr. H. S.
Lawrence.

19 Feb., 1908

16208. Is that experiment in the sense of demonstration or research work, or both?—The experiments are such as to ascertain whether better varieties of a special crop can be grown, such as better varieties of cotton or wheat. The demonstration would be when you have discovered what special variety that was. When you grow them the rayats come and see if it is a success.

16209. So that both those branches of work are carried on in India?—Yes.

16210. Is there any organised system of travelling inspectors and advisers radiating from those centres and going out amongst the rayats?—We have only got two men we have been able to send out so far, because we do not like to send them out unless they are thoroughly experienced men. But we intend to develop that as our staff gets more numerous and better experienced; but it is a dangerous thing.

16211. Then is there any encouragement of school shows or school gardens in the elementary schools in India?—I believe some such systems exist in the Central Provinces, but I have not seen them.

16212. In the last few years in the West Indies we have had very great development both of school gardens and school shows, and in the colony with which I am connected, in Trinidad that is, there is a population of 100,000 Indians, and they show themselves very ready to respond in this work. Many of the elementary school teachers are Indians, and have taken up the work very keenly indeed, and I was wondering whether you had any similar experience in India?—A similar experiment was tried about 20 years ago, but without success, and we are rather nervous about starting that again.

16213. I suppose these experimental farms are open to the elementary school teachers who are desirous of going there for a short course, say for a month's course in agricultural training?—We have training colleges for those elementary school teachers. There are four in number for the different divisions and provinces of Bombay, where we have numerous languages. At those four training colleges there is a small farm attached, a matter of 10 acres or so, and there the elementary teachers are shown something about agriculture. That is chiefly with a view to incorporating the result of their observation in nature lessons. In India there is a very wide distinction between the professional classes and the cultivating classes, and the teachers are drawn from the professional classes, and as a rule they know nothing whatsoever about plants. So that we are not prepared, as a general rule, to ask them to start and cultivate gardens or small farms, because we know they would not make a success of them.

16214. Is there any development of agricultural classes of an intermediate grade? Is that any part of the future scheme of agricultural work in India, between the elementary school and an institution such as that at Poona?—Not at present.

16215. I very strongly agree with what you said in regard to the establishment of a readership in tropical agriculture in one or more of the British universities, for which there is a great need also in connection with the West Indies, and I should like to know whether you have thought out the possible lines on which it might be created, or whether the Government of India itself has any idea of subsidising such a readership in any agricultural university here?—I do not know that any such proposal has been put before the Government of India, and I have no authority to speak on their behalf. I can only express my personal opinion that that would be a very valuable thing.

16216. Can you tell me whether that is an opinion that is at all widely held by others?—The suggestion was put before me by Mr. Barber, who is an Indian botanist at present visiting several agricultural institutions at home, I understand, under the orders of the Government of India, and I asked him for any suggestions he had to make, and this was the principal one he sent me, and I thought it a very valuable one.

16217. If it were possible for India to co-operate with some of the other Colonies, such as Ceylon or the West Indies, or other tropical colonies, in subsidising such a Chair so as to distribute the expense, it would seem to be a practical proposal?—I think it would be. I think it is very likely the proposal would be accepted, but I have no authority to say so.

16218. (By Professor Middleton.) The cost would be about three or four hundred pounds, I suppose?—Yes.

16219. What is the relation of the new college at Poona to the College of Science?—It is completely distinct; that is to say it has been a part of the College of Science, but now, under the new scheme it will be completely distinct.

*16220. Is the new College of Agriculture affiliated to the university of Bombay?—The proposal has been put before the university and, no doubt, it will be accepted.

*16221. So that the students trained at the college at Poona will graduate at the university of Bombay?—Yes.

*16222. Are they at present able to graduate?—Yes, they are.

*16223. Then it must be affiliated?—As a branch of the College of Science it was affiliated; but now the university have to accept and consider the new proposal. I think the new College of Agriculture should be affiliated.

*16224. And that is being done or is in process of being considered?—It is in process of being considered.

16225. You said you were not aware whether you had any serious difficulty in securing teachers or experts for India?—I have no knowledge of that.

16226. But you know that these experts have come from chiefly two institutions in this country?—Yes.

16227. If India is prepared to spend such a large sum in developing agriculture it shows that it recognises the need for these men?—Certainly.

16228. Therefore, in your opinion, India might do something towards the training of a suitable class of man for this work—that is your personal opinion I understand?—Do you mean towards providing the readership?

16229. Yes, so that the men who have to go out to India as experts should have some preliminary training before they enter on their duties?—Yes.

16230. (By the Chairman.) Is there any preliminary examination or entrance examination to the college at Poona?—Yes, the students have passed what is called the previous examination; that is the first year's course of the ordinary arts course, which leads to the degree of Bachelor of Arts.

16231. Do you think that is a wise course to take?—Yes, certainly. Without that they would not know enough English to attend the lectures.

16232. Do they pay fees there?—Yes, but there are a number of scholarships.

16233. A number of scholarships by the Government?—Yes, but the majority pay some small fee. I could not say what it is, but it is something very small.

16234. Of course, the college is entirely supported by the Government?—Yes, entirely.

16235. And a diploma is given at the end of the course?—Yes.

16236. It is a three years' course, is it not?—Yes.

16237. How is the examination conducted—by the personnel of the college?—No, the university appoints examiners.

16238. But do they take into account the work done at the college?—Do the examiners take that into account?

16239. Yes.—They ought to do so, and I presume they do.

16240. That is what I mean. Do they take it into account, and do they see the work that he has done in the laboratory?—No.

16241. The candidate is passed by them on the actual examination?—Yes.

16242. And nothing else?—Yes.

16243. (By Professor Middleton.) But they must be certified to have taken some special course in the college first, and to have attended certain laboratory classes?—Yes.

16244. So that the work done at the college is immediately under the control of the University of Bombay in that way?—Yes.

*Mr. Mead also supplied the following:—

16220-4. The Agricultural College, as distinct from the College of Science, has been affiliated to the University of Bombay.

Mr. H. S.
Lawrence.
19 Feb., 1908

16245. (*By the Chairman.*) Are there any students coming from the native States?—Yes.

16246. In the native States is anything done for the promotion of agriculture? Of course, in Baroda we know there is; but in Kathiawar, for instance, have any of the native States appointed a director of agriculture of their own?—No. There is no other director of agriculture that I know of except the one in Baroda. But some of the native States do have farms or gardens of their own.

16247. Experimental gardens?—Yes.

16248. Is there one at Bhawnagar?—No, but Gondal has one.

16249. Of course, in regard to cotton and sugar and so on, experiments are of great importance?—Yes.

16250. And they are having an immediate influence on the crops?—Yes.

16251. And on the whole condition of the growing of those crops?—Yes.

16252. Is there any bulletin published in India on the results of the research at Pusa; do they publish anything?—Yes, there is a quarterly journal published by the Pusa Institute.

*16253. And are any associations formed amongst the agriculturists themselves, or is there anything done in that direction, such as our farmers' clubs?—There is one that has been in existence in Bombay for twenty-five years, at Nadiad.

16254. In Gujerat?—Yes.

16255. A good deal of tobacco plant is cultivated there?—Yes.

16256. Is that tobacco plantation going to be successful?—I am afraid it has not been successful in obtaining tobacco for European consumption.

16257. But do they still attempt it, or has it disappeared?—A good deal of tobacco is grown for native consumption in Nadiad, and also there is an agricultural association at Dharwar.

16258. That is of native landowners?—Yes.

16259. And not official in any way?—The collector is the official president.

16260. But it is an independent association?—Yes.

16261. Do they collect contributions?—Yes.

16262. Do they organise shows?—They have not done so yet that I know of.

16263. Of course, we know there are shows in the south Mahratta country?—Yes.

16264. And they are very important as to the influence they exercise?—Yes. There are the cattle shows, for example, that you mean?

16265. Yes, and they exercise a very good influence?—Certainly.

16266. Is the agricultural education in Bombay under the Department of Agriculture, or under the Department of Education?—In all the provinces of India, I understand, it is under the Department of Agriculture. In Bombay, the Director of Public Education has been associated with the Director of Agriculture in joint control, but that was practically a private arrangement between myself and the Director of Public Education, because I wished to have his advice in various matters of the educational code which cropped up; but it was understood that the arrangement was personal to us two, and would probably be revised as soon as new officers came into those two posts.

16267. It was temporary?—Yes.

16268. Is there a registrar for the native co-operative societies in Bombay?—Yes.

16269. But you say that that has not been developed much lately?—No, I think not on a large scale.

16270. You have not got 50,000 co-operators, as in the North-West?—No.

Mr. Mead also forwarded the following notes:—

16271. On the general question of the provision of experts for the vast amount of scientific work waiting to be done in India, it appears probable that for many years to come reliance must be placed on Universities like Cambridge and Oxford for these higher posts, which demand originality in research work with power of organisation and administrative ability.

16272. Further, it appears highly desirable that the present European experts employed should be given opportunities for keeping their knowledge up to date. If they could periodically be granted "study leave" and could add to their present experience of Indian conditions a knowledge of the best scientific work done at some great centre of scientific research, their usefulness would be greatly increased.

Mr. W. H. MORELAND, C.I.E., called and examined.

Mr. W. H.
Moreland.
19 Feb., 1908

16273. (*By the Chairman.*) You are Director of the Department of Land Records and Agriculture in the United Provinces?—Yes.

16274. Will you just tell the Committee what the work of the Director of Agriculture is?—You do not, of course, want to know about the miscellaneous work, the compilation of statistics, and so on?

16275. No.—On the strictly agricultural side of the Director's duties he has, speaking generally, to do what he can to help an enormous number of small cultivators, and he has to do this, firstly, by study and experiment, and, secondly, by demonstration. Those two categories are, I suppose, common to all agricultural departments throughout the world. But, thirdly, having experimented and having demonstrated, he has to help the small cultivators to make use of any new thing that he puts before them. That, I think, is probably the chief differentia of the work in India from work in western countries.

16276. What have you to say with regard to banks?—They are still in the experimental stage in our Provinces. I am not in charge of what is known as the Department of Co-operative Credit, but that is in very close touch with the Director of Agriculture, and according to the latest figures I see there are now about 50,000 individuals in the provinces interested in co-operative credit societies of one kind or another. But still, 50,000 is a very small number out of a population of nearly 50,000,000, which we have to

consider. So that, as I say, the work is experimental, but the experiment is hopeful, and I believe myself that it is pretty certain that in time we shall evolve a definite system under which the best of the small cultivators will be able to finance themselves; not all the cultivators, but the bulk of them and the best of them. I do not think there is anything special in our methods that would interest the Committee. We have been working so far tentatively, beginning on Raiffeisen lines and adapting them as we go along.

16277. Has the impulse with regard to co-operation been given by the Government?—The impulse came entirely from the Government, and even now the greatest difficulty is found in getting people to do the propaganda work. We make the best of our cultivators understand exactly what a co-operative society is, and they want to take it up at once. But the difficulty is to get people to help in the work of bringing home to the people what a co-operative society is.

16278. That being so, how is it made clear to them?—It has been done mainly by the Registrar and his staff—he has a salaried staff of young Indians, educated men, whom he appoints and sends out to teach. But now the movement is certainly beginning to propagate itself by example. That is to say, if there is a bank in one village, and another village is near them, the latter begin to come in and say "We want a bank, too." That is the most hopeful sign of the movement.

**Mr. Mead also supplied the following:—*

16253. Several local associations which have been formed have shown considerable interest in agricultural affairs. The question of employing such associations for the purpose of collecting and disseminating information on agricultural matters amongst the cultivating classes is at present engaging the attention of the Government.

16279. Does the Government advance any money to those co-operative banks?—A certain amount; I cannot say exactly how much. It is under certain limitations, but I have not got a note of them here. The Government lends a certain amount on condition, if I remember rightly, of a larger amount being raised independently of the Government.

16280. You say that there is a special official charged with the duty of supervising this co-operative movement?—Yes; under the law he is the Registrar of Co-operative Credit Societies and is required to register societies of which the bye-laws are in accordance with the law. But entirely apart from his legal duties he is expected to be the impetus at the back of the whole movement, not only for credit but for co-operation in agriculture, independently of credit.

16281. Is he a civilian?—He is a civilian. I do not think the post is limited to civilians, but as a matter of fact he is a civilian.

16282. And he has special knowledge of co-operation?—He has no previous special knowledge of co-operation; but, of course, when the post falls vacant he is selected with some care. He knows the people and their circumstances, and also knows how the co-operative movement has started in India.

16283. Is there a special Act for the co-operative societies?—There is.

16284. Is that an Imperial Act?—Yes.

16285. Of what date, do you remember?—1904 or 1905.

16286. As late as that?—Yes, I think so.

16287. Is there any other part of India where the co-operative movement is so advanced as it is with you?—I cannot speak definitely for other parts of India, but there is a registrar in every larger province, and they are all doing something towards developing it in different directions.

16288. Then, to turn to agriculture, you have in some parts of India large land proprietors?—Yes, a large proportion of land proprietors.

16289. Have you been successful in the United Provinces in getting the zemindars to send their sons, and are they aware of the importance of sending their sons to agricultural colleges?—Not yet. I am not so hopeful as I was a few years ago that any considerable number of them will do so. The most to expect is that one here or there will come, because it means you will first have to educate the landholders themselves, and in the social conditions prevailing in our Provinces a landholder to begin with does not want to have a son educated at all; but when the desire for education comes, then he wants a liberal education to turn his son from being a landholder's son into a Government official. The time may come when he will long to turn his son from being an uneducated landowner into an educated one, but that is not in sight yet.

16290. Have they got managers for their estates, or do they manage them themselves?—There are a large number of them who manage through others. That is, of course, the main point where I hope the agricultural college will justify its existence, apart from its first function of "staffing" a Government Department. The thing is to create a profession of trained land agents, which, as a matter of fact, does not exist in the country at the present time. At the present time a landlord who wants a man trained in the knowledge of the country has no place to look for him.

16291. In the United Provinces, as in Bombay, in recent years have you found a greater desire to spend money on agricultural education and on the development of agriculture?—By whom do you mean?

16292. By the Government?—The position is entirely changed. Up to a few years ago you could not get money for anything, but in our Provinces our financial history is a matter which I should not trouble this Committee with. It has been such that nobody has had any money to do anything with, and as a matter of fact what money there is now is given by the Imperial Government and is earmarked for this purpose at the time it is given. But the change in our Provinces dates from the time when Sir Anthony MacDonnell came back from the famine commission of 1900-1. Sir Anthony MacDonnell came back from that commission convinced that as part of the measures of the famine policy it was essential to have a strong agricultural department.

16293. (*Mr. Lamont.*) One question with regard to the co-operative societies. Are they co-operative for the sale of produce and for the purchase of commodities as well as for banking?—It has not got to that stage yet. I am speaking of the whole thing as very experimental. As far as we can judge there are fewer obstacles in the way of beginning with credit than with other objects; but I have assisted in founding some societies for the supply of pure seed, as a beginning, and I heard recently of one society which assists its members by buying grain at harvest and selling it later on. If you know India you know the tremendous difference between harvest prices and other prices, and one of the most promising societies, which originated purely as a credit society, has begun to employ its funds in purchasing the grain at harvest time and selling it six months later at the best prices which could be got. But speaking generally, supply societies and produce societies are hardly started in our Provinces.

16294. (*By the Chairman.*) The main object, as you have stated, is credit?—Yes, credit is the first thing. If once the people get into the habit of clubbing their credit for any purpose the rest will come very easily.

16295. (*By Professor Middleton.*) Where is your teaching institution in the United Provinces?—Cawnpore.

16296. Is it an agricultural college or a high school?—It is now a college. It began as a school in 1893, and it is now in its second year as a college.

16297. How many Europeans do you employ on the staff?—We have a staff of three, a principal and a chemist and a botanist. The chemist and botanist are mainly expected to do research and organisation. The actual teaching is to be done by Indians, at least the great bulk of it, but under the direction of Europeans.

16298. Then attached to the college you have an experimental farm or garden, have you not?—The experimental farm we have is separated from the college; it is near the college, and the higher classes can be instructed in the experiments there, but it is under separate management from the college. We have an instruction farm where the senior agricultural lecturer (an Indian), carries out agriculture to make a profit, and is allowed 50 per cent. of the profits.

16299. What is his name?—Mr. Patwardhan, one of your old pupils. But that is purely an instruction farm with no more experiment than a farmer should carry out.

16300. (*By the Chairman.*) Will you give us your view as to whether agricultural education should be under the Agricultural Department or under the Education Department?—In the United Provinces it was decided that it should be under the Agricultural Department. I do not think that I am prepared at the present moment to give a reasoned statement of my views; it was a matter of discussion, and it was considered at some length. But it is the sort of thing I should prefer to make a statement of my reasons in writing about. I hold that the Agricultural Department is the right department, provided that the Director of the Agricultural Department can work in harmony with the Education Department and take advice and assistance from them when he wants it.

16301. Will you put that down in writing?—I put a paragraph bearing on the subject at the end of the note I handed in. I say "The Director's position in regard to the Agricultural College is analogous to that of a governing body, but he is authorised to consult the Director of Public Instruction on matters of educational concern." That is the official phrase, "he is authorised to consult." As a matter of fact the Director of Public Instruction and I discuss any matter of importance on the educational side of it quite informally, but the decision is mine.

16302. You are prepared to argue the advantages of that arrangement?—I am not prepared to argue it in the time left to me now.

16303. But you could just give us an epitome of your views?—On the question of control?

16304. Yes.—And the reasons?

16305. Yes.—I will try to do it before I go.

16306. The Committee would like to have your opinion about it, as it is rather an important question for them?—I will forward a statement on the subject. [*The witness subsequently forwarded a memorandum stating the reasons why the Cawnpore Agricultural College was placed under the control of the Agricultural Department.*]

Mr. W. H.
Moreland.
19 Feb., 1908

The following is a copy of a letter received from the Hon. Secretary of the Agricultural Education Association:—

Midland Agricultural and Dairy College,
Kingston, Derby.

January 29th, 1906.

SIR:

I have been instructed to forward to you, for the information of the Committee, an account of the constitution, membership and objects of the above Association, together with a copy of the Rules and list of present members.

CONSTITUTION.

The Association was constituted on October 11th, 1894. Originally it consisted of the heads of agricultural departments in English and Welsh colleges; but in 1901 its constitution was considerably enlarged, and it now consists of members of any organisations or institutions connected with agricultural education or research who themselves are, or have been, engaged in teaching or research.

At present the Association consists of members of the teaching staff of every agricultural department or college in Great Britain, together with others connected with institutions in Ireland and the Colonies who are officially interested in agricultural education.

MEMBERSHIP.

When constituted, the Association had eight members. At the present time the membership is one hundred and five, representing forty-five departments and institutions.

The following is a list of the departments, colleges or local bodies one or more of the members of which are now members of the Association:—

Board of Agriculture.
Board of Education.
Department of Agriculture and Technical Instruction for Ireland.
Experimental Station, Rothamsted.
University of Aberdeen.
University of Cambridge.
University of Edinburgh.
University of Leeds.
University College of Wales, Aberystwyth.
University College of North Wales, Bangor.
Royal College of Science, Dublin.
Armstrong College, Newcastle-upon-Tyne.
University College, Reading.
South-Eastern Agricultural College, Wye, Kent.
Midland Agricultural and Dairy College, Kingston, Derby.
Agricultural College, Aspatria.
Royal Agricultural College, Cirencester.
Harper-Adams Agricultural College, Newport, Salop.
College of Agriculture and Horticulture, Holmes Chapel, Cheshire.
University College, Bristol.
Agricultural Institute, Ridgmont, Beds.
Agricultural and Horticultural College, Uckfield, Sussex.
Edinburgh and East of Scotland College of Agriculture, Edinburgh.
West of Scotland Agricultural College, Glasgow.
National Fruit and Cider Institute, Long Ashton.
Dauntsey Agricultural School, West Lavington, Devizes.
Hampshire Farm School, Basing.
Cumberland and Westmorland Farm School, Newton Rigg.
Devonshire County Council, Agricultural Department.
Dorsetshire " " "
Essex " " "
Gloucestershire " " "
Herefordshire " " "
Lancashire " " "
Monmouthshire " " "
Somersetshire " " "
Staffordshire " " "
Royal Agricultural Society of England.
Agricultural Organisation Society.
Transvaal Department of Agriculture, Pretoria.
Government College of Agriculture, South Australia.
Government College of Agriculture, Cape Colony.
Government College of Agriculture, Poona, India.
Department of Agriculture for India.
Agricultural Research Institute, Pusa, Bengal.

The Association may thus claim to be a body of experts in agricultural education.

OBJECTS.

The object of the Association, as defined by the Rules, is the development of agricultural education and research by mutual assistance and advice among the members. It endeavours to attain that object by frequent discussion and intercourse, and thus to promote co-operation and uniformity of action among the institutions concerned as regards educational questions, field experiments, research, publication of results, and other matters where agreement is desirable, without interfering with the individuality or local needs of each institution. It is also always ready to assist and advise public bodies dealing with matters relating to agricultural education.

WORK.

The Association holds a summer and a winter meeting in each year. The summer meeting takes the form of a conference and is held at some centre of agricultural interest. For example, the last five summer meetings have been held respectively at the South-Eastern Agricultural College; the Armstrong College; the University of Cambridge; Agricultural Research Station, Rothamsted; and Royal Agricultural Society's Research Station, Woburn; the West of Scotland Agricultural College; and the Midland Agricultural and Dairy College. At these meetings every opportunity is afforded the members of inquiring into the system of management of the college or station visited, and a number of papers relating more particularly to recent research in agricultural science are read and discussed.

The Association has carried out an extensive scheme of Crop Rotation Trials, the results of which were published by the Board of Agriculture; and has formulated and printed recommendations on such subjects as the following:—

- (a) Chemical Analysis of Soils on uniform basis.
- (b) Mechanical Analysis of Soils on uniform basis.
- (c) Field Experiments on the Manuring of Crops on a uniform basis.
- (d) Joint Experiments on the Winter Feeding of Dairy Cows.
- (e) Joint Experiments on the Summer Feeding of Dairy Cows.
- (f) Joint Experiments to test Seed Mixtures for Permanent Grass.
- (g) Joint Experiments to test the efficacy of inoculating material on Beans and Clover.

The Association has on several occasions been consulted by the Board of Agriculture.

The Association assisted the Board of Education in revising the Agricultural Syllabus of that Department.

The Association has on several occasions been in communication with the Joint Education Board of the Royal Agricultural Society and the Highland and Agricultural Society as to the method of carrying out the examination for the National Diploma in Agriculture.

It was mainly at the instigation of the Association that the Royal Agricultural Society instituted the Agricultural Education Exhibitions at their Annual Show, and the Association uses its best endeavours to make these annual exhibitions successful and of interest and usefulness to the agricultural community. In this exhibition it yearly provides, at its own expense, a stand for the distribution of the agricultural literature published by the institutions it represents.

FINANCES.

The Association's income at the present time is about £50 per annum, derived entirely from members' subscriptions. This income is spent in printing and circulating the results of its deliberations and in the clerical and other expenses involved by the Association's meetings.

I am,
Sir,

Your obedient Servant,
J. F. BLACKSHAW,
Hon. Secretary,
Agricultural Education Association.

To the Secretary,
Departmental Committee on Agricultural Education.

LIST OF THE PRINCIPAL HEADINGS AND SUB-HEADINGS UNDER WHICH THE EVIDENCE IS CLASSIFIED IN THE FOLLOWING INDEX.

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- ABERYSTWYTH, UNIVERSITY COLLEGE OF WALES.
 ADVICE AND ASSISTANCE GIVEN TO ADULT FARMERS.
 AGRICULTURAL EDUCATION ASSOCIATION.
 AGRICULTURAL EDUCATION COMMITTEE.
 ANALYSES.
 ARMSTRONG COLLEGE, NEWCASTLE-UPON-TYNE.
 ASPATRIA AGRICULTURAL COLLEGE, CARLISLE.
 ATTITUDE OF AGRICULTURISTS TOWARDS—
 Agricultural Education generally.
 Instruction provided by the various colleges,
 counties, &c.
 Relationship between science and practice.
 BANGOR, UNIVERSITY OF NORTH WALES.
 BASING, HAMPSHIRE FARM SCHOOL AT.
 BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.
 BERKSHIRE.
 "BIGOD'S HALL," COUNTESS OF WARWICK'S SCHOOL AT
 DUNMOW.
 BIRMINGHAM, UNIVERSITY OF.
 BOARD OF AGRICULTURE AND FISHERIES :
 Educational Branch.
 Honorary Agricultural Correspondents.
 Intelligence Branch.
 Publications.
 BOARD OF EDUCATION :
 Agricultural Work of County Councils.
 Elementary Schools.
 Grants.
 Higher Elementary or Secondary Schools.
 Technical Classes or Institutions.
 BREDON'S NORTON, SCHOOL OF GARDENING AT.
 BRISTOL UNIVERSITY COLLEGE.
 BRITISH BEE-KEEPERS' ASSOCIATION.
 BRITISH DAIRY INSTITUTE, READING.
 CAMBRIDGE, UNIVERSITY OF.
 COLONIAL AND FOREIGN COUNTRIES, AGRICULTURAL
 EDUCATION IN :
 Australia. Austria. Belgium. Canada. Denmark.
 France. Germany. Holland. Hungary. India.
 Italy. New Zealand. United States. West
 Indies.
 CO-OPERATION, AGRICULTURAL.
 COUNTY COUNCILS, WORK OF THE.
 DAUNTSEY AGRICULTURAL SCHOOL, WEST LAVINGTON.
 DORSET.
 EASTERN COUNTIES DAIRY INSTITUTE, IPSWICH.
 EFFECT AND VALUE OF AGRICULTURAL EDUCATION.
 ELEMENTARY SCHOOL TEACHERS :
 Instruction or Training in Rural Subjects.
 Provision for such Training.
 ESSEX COUNTY TECHNICAL LABORATORIES.
 EXAMINATIONS :
 National Diploma Examinations :
 Agriculture.
 Dairying.
 EXPENDITURE UPON AGRICULTURAL EDUCATION :
 Board of Agriculture :
 Grants from, to agricultural institutions.
 Support given by, to County Councils.
 County Councils.
 Institutions providing agricultural instruction.
 EXPERIMENTS OR DEMONSTRATIONS :
 Demonstrations for farmers.
 Need for increase of experiments or experimental
 work.
 Co-ordination of Experiments :
 Manurial scheme prepared by the Agricultural
 Education Association.
 FARMING, KNOWLEDGE OF PRACTICAL.
 System of apprenticing lads to farmers or land-agents.
 Whether an agricultural student should obtain his
 knowledge of practical farming before or after his
 college course.
 FARRIERS, WORSHIPFUL COMPANY OF.
 GLOUCESTERSHIRE.
 HARPER-ADAMS AGRICULTURAL COLLEGE, NEWPORT,
 SALOP.
 HEREFORD.
 HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.
 HOLMES CHAPEL, CHESHIRE, COLLEGE OF AGRICULTURE
 AND HORTICULTURE AT.
 INSTITUTIONS PROVIDING INSTRUCTION IN AGRICULTURE :
 Higher Agricultural Institutions.
 Minor Agricultural Institutions :
 Agricultural Schools.
 Farm Institutes or Farm School.
 Short Agricultural Courses.
 IRELAND.
 LABOURERS.
 LANCASHIRE :
 Harris Institute.
 Hutton Farm.
 LECTURES, AGRICULTURAL :
 Audience.
 Lecturer.
 Local Organisation.
 Subject of.
 Value of.
 LEEDS, UNIVERSITY OF.
 MANCHESTER, VICTORIA UNIVERSITY OF.
 MIDLAND AGRICULTURAL AND DAIRY COLLEGE, KING-
 STON, DERBY.
 MONMOUTH.
 NATIONAL FRUIT AND CIDER INSTITUTE AT LONG ASHTON,
 NEAR BRISTOL.
 NEWTON RIGG, CUMBERLAND AND WESTMORLAND FARM
 SCHOOL AT.
 NORFOLK.
 NORTH-EASTERN COUNTY SCHOOL, BARNARD CASTLE.
 ORGANISATION AND CONTROL OF AGRICULTURAL EDUCA-
 TION.
 Agricultural Societies.
 County Councils.
 Extent of the provision of Agricultural Education.
 Government Department or Central Authority.
 Board of Agriculture and Fisheries.
 Board of Education.
 Institutions, Agricultural.
 Most suitable unit for purposes of agricultural educa-
 tion.
 Permanent Consultative Committee.
 OXFORD, UNIVERSITY OF.

PREVIOUS EDUCATION :

Continuation Classes.
 Elementary.
 Nature Study.
 Of student attending various agricultural colleges.
 School gardens.
 Secondary.
 Character of the education at secondary schools.

READING UNIVERSITY COLLEGE.

RESEARCH :

Control of.
 Encouragement by the State.
 Importance and appreciation of.
 The need for further.
 Where, and by whom, research should be conducted.

RIDGMONT AGRICULTURAL INSTITUTE, BEDFORDSHIRE.

ROYAL AGRICULTURAL COLLEGE, CIRENCESTER.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

ROYAL HORTICULTURAL SOCIETY.

ROYAL METEOROLOGICAL SOCIETY.

ROYAL VETERINARY COLLEGE, LONDON.

SCHOLARSHIPS :

Amount of.
 Policy of giving.

SCOTLAND

SOMERSET.

SOUTH EASTERN AGRICULTURAL COLLEGE, WYE.

STAFF, AGRICULTURAL, OF COLLEGES AND COUNTY COUNCILS:

Demand for.
 Qualifications of.
 Salaries of.
 Training of.
 Travelling scholarships.

STUDLEY HORTICULTURAL COLLEGE, WARWICKSHIRE.

SUBJECTS OF INSTRUCTION.

Agricultural History or Economics. Agriculture.
 Bee-keeping. Biology. Chemistry. Cidermaking.
 Dairying. Drawing. Farriery. Forestry. Geology.
 Horticulture. Manual Processes. Meteorology.
 Poultry-keeping. Veterinary Hygiene.

SURVEYORS' INSTITUTION.

SUSSEX, WEST.

SWANLEY HORTICULTURAL COLLEGE, KENT.

UCKFIELD, AGRICULTURAL AND HORTICULTURAL COLLEGE
 AT.

VETERINARY EDUCATION.

WILTSHIRE.

WOMEN, INSTRUCTION IN AGRICULTURE AND HORTICUL-
 TURE FOR.

WORCESTER.

WORLESTON DAIRY INSTITUTE, CHESHIRE.

GENERAL INDEX OF THE MINUTES OF EVIDENCE.

ABERYSTWYTH, UNIVERSITY COLLEGE OF WALES.

Evidence received principally from (Roberts) 8102-8248; (Davies) 8249-8404.

Analyses (Davies) 8256f, 8257, 8283, 8326-7; (Roberts) 8111r, 8112-3a, 8113m.

Bangor, relations with, *see under* Bangor.

Boundary between, and Bangor at present inconvenient (Dugdale), 4958-9, 5011-2.

Comment upon (Pennant) 6612-5; (Roberts) 8192-6.

Counties which support the College and amount of their contributions (Roberts) 8111b, 8117-8, 8152-4.

Relations with (Roberts) 8189-221.

Distribution of reports, &c. (Roberts) 8111n.

Glamorgan, connection with (Roberts) 8119c.

Governing body (Roberts) 8111, 8111c, 8241-4.

History of the formation of the Agricultural Department and chronological sketch of the extension and development of its work (Roberts) 8105-6, 8109-19.

Attitude of Agriculturists towards, see that title.

Courses of Instruction (Davies) 8340-4, 8401; (Roberts) 8111c, j, l, o, p, 8113i, 8113n-8114, 8150-1, 8227-34.

Elementary school teachers, *see that title.*

External Work :

Dairying (Davies) 8256c, 8305-8; (Roberts) 8111e, g, i, k, o.

Experiments (Davies) 8271, 8279; (Roberts) 8111h, l, 8113g.

Horticulture (Davies) 8269-70; (Roberts) 8113c, l, 8119a, b, 8222.

Lectures (Davies) 8256b, 8309-14, 8318-21; (Roberts) 8111e, h, 8138.

Made difficult owing to defective means of communication (Roberts) 8111d.

With regard to co-operation (Davies) 8282; (Roberts) 8111n, 8113j, 8114c.

Farm (Davies) 8271-8, 8299-303, 8114c-6; (Roberts) 8223, 8240.

Finance :

Require further assistance from national funds, especially for the more advanced work (Roberts) 8111c, 8119d, 8119n-8128, 8167-70, 8218.

Sources of income (Roberts) 8111a, b, e, 8133-6, 8187-8.

Scholarships tenable at (Davies) 8256d, 8263-7, 8297-8, 8344-6, 8374-5, 8377-85, 8390; (Roberts) 8111f, 8155-9.

Need of, for more advanced and longer courses (Roberts) 8128, 8164.

Students :

Agricultural Association (Roberts) 8111p, 8113b, 8113g, 8114b, c.

Fees and cost of maintenance (Roberts) 8135-7.

Influence exerted by old, on the agriculturist of the counties (Davies) 8256e, 8392-3, 8176-82.

Number of (Roberts) 8114a, 8163-4, 8175.

Previous education of, *see that title.*

Residential accommodation for (Roberts) 8224-6, 8238.

Type of student and their after careers (Davies) 8263-8, 8333-9, 8344-52; (Roberts) 8111m, 8113e, f, 8129-32, 8135, 8160-3, 8227, 8235-7.

Staff (Roberts) 8111a, g, 8113b, 8119d, 8149.

Majority of, must be able to speak Welsh (Roberts) 8143-4.

ACLAND, SIR C. T. DYKE, Bart., Nominated by the Bath and West and Southern Counties Society.

Evidence, 2617-2926.

ADVICE AND ASSISTANCE GIVEN TO ADULT FARMERS.

Assistance by correspondence is appreciated (Amos) 916-8.

Benefit to farmer for instructor to visit him at his farm (Amos) 904.

Dissemination of literature is not sufficient unless it is done personally (Lodge) 5482.

Farmers appreciate no form of instruction more than personal visits and advice (Brockholes) 13683-9.

Farmers' institutes (Brown) 6171b; (Craigie) 13218-13220.

Farmers need definite information upon points they are interested in (Hale) 13299-302, 13311; (T. H. Middleton) 15459b; (Sutton) 4071-5; (Turnor) 14298-9.

Farmers prefer advice given on the land (Collinge) 5051-2.

In conducting experiments for themselves (Percival) 4292-3, 4297.

Need of more effective distribution of agricultural literature (Fisher) 3036-9; (Gilchrist) 520-1; (Weiss) 8947-51.

Spread of information very desirable (Simmons) 8608-11.

Teaching which is conveyed to adult farmers, by means of demonstration plots and personal visits is one of the most beneficial forms of instruction (Craigie) 13178c.

There should be attached to central institution one man, with county for unit, whose sole duty it would be to advise and assist farmers (Eve) 12993, 13008, 13051-7, 13096-100.

Useful work could be done by teachers visiting labourers and farmers (Brown) 6273-7.

Value of the agricultural article in local papers (Dugdale) 5018.

AGRICULTURAL AND HORTICULTURAL COLLEGE, UCKFIELD. *See under* Uckfield.

AGRICULTURAL CLUBS FOR VILLAGE LADS

(Carrick) 494-9; (Turner) 7899-902, 7928-30, 8012-6, 8047-8.

AGRICULTURAL COLLEGES. *See under* Institutions.AGRICULTURAL EDUCATION ASSOCIATION. *See* page 606.

Aim of (T. H. Middleton) 15460c.

Experiments, co-ordination of, *see under* Experiments.

Ought to be assisted and encouraged by the Government (Campbell) 11184b-9, 11220-4.

Some means might be devised for making more use of (T. H. Middleton) 15460d.

Work of the (Foulkes) 5793-5, 5900-2.

AGRICULTURAL EDUCATION COMMITTEE.

Did useful work (Percival) 4362-3.

Objects of, and main lines of action (Hobhouse) 14924-6, 14928, 15075-6.

Resolutions adopted by, as to the organisation of agricultural education (Acland) 2831-3.

AGRICULTURAL HISTORY OR ECONOMICS. *See under* Subjects of Instruction.

AGRICULTURAL LIBRARIES, PROVISION OF

(Dugdale) 5018-9; (Hogben) 14121-4; (Household) 8099; (Peet) 12480-2; (Turnor) 14440-3.

• AGRICULTURAL SCHOOLS. *See under* Institutions.

AGRICULTURAL SOCIETIES, EDUCATIONAL WORK OF. *See under* Organisation.

AGRICULTURE. *See under* Subjects of Instruction.

ALLTOFT, Mr. P. *Instructor in Manual Processes in the Lindsey Division of Lincoln and Wiltshire.* (Qualifications of Witness, *see* 10602-7, 10640, 10660-1.)

Evidence, 10599-10758.

AMOS, Mr. A. *A Governor and Chairman of the Farm Committee of the South-Eastern Agricultural College, Wye.*

Evidence, 882-950.

ANALYSES.

For information as to the number, &c., of analyses carried out by any institution or county, see under the particular institution or county.

At agricultural colleges, are not always carried out by competent analysts (*Voelcker*) 13987, 14017-8, 14021-9, 14031-7.

Charge should be made for (*Mannington*) 2148-9.

College gets into touch with farmers by means of analyses (*Foulkes*) 5786-8.

Deprecates public money which is given for educational purposes being used to supply farmers with cheap analyses (*Voelcker*) 13986-91, 14013-6, 14019-20, 14024-6, 14037-9.

Farmers prefer analyses from educational institutions • because with the analysis they receive advice (*Nicholas*) 1188-9, 1203-7; (*Steel*) 1184-7.

Farmers welcome the opportunity of obtaining information privately (*Burne*) 5570-2; (*Foulkes*) 5786-8.

Milk-testing scheme prepared by the Board of Agriculture, *see under* Board of Agriculture and Fisheries, Intelligence Branch.

To secure the interest of farmers it is necessary to offer information of definite use, *e.g.*, analyses (*Percival*) 4229a.

Would advocate giving farmers further facilities for obtaining analytical information (*Foulkes*) 5855-6.

Would rather not undertake legal analyses because the presence of a member of a college in the law courts is not advisable (*Dunstun*) 823, 853-5.

ANIMAL HYGIENE. *See under* Subjects of Instruction—Veterinary Hygiene.

ARMSTRONG COLLEGE, NEWCASTLE-UPON-TYNE.

Evidence received principally from (Carrick) 315-516; (Gilchrist) 517-750.

Advice and assistance given to farmers and others (Carrick) 434-5; (Gilchrist) 530, 682-5.

Bulletins distributed (Gilchrist) 614-21, 714, 717.

Counties which support, influence exerted over (Gilchrist) 725-9.

Cumberland and Westmorland Farm School, *see under* Newton Rigg.

Governing body (Carrick) 319-20, 400-4; (Gilchrist) 623-4, 653-6.

Attitude of Agriculturists towards, *see that title.*

Courses of instruction (Carrick) 436-7; (Gilchrist) 534-9, 550-1, 563-7, 643, 703-11, 744-5.

Dairying, instruction in, requires developing (Gilchrist) 528a, 648, 663, 690-1.

Elementary school teachers, *see that title.*

External Work :

Cockle Park Farm (Carrick) 339-42, 372-9, 454-63.

Experimental work (Gilchrist) 572-5.

Needs developing (Gilchrist) 529, 531.

Horticulture (Gilchrist) 718-20; (W. T. Lawrence) 7438.

Lectures (Carrick) 344-7, 441-5; (Gilchrist) 568-71, 612-4, 667-9, 686-7.

Offerton Dairy Station (Carrick) 363-5, 379-85, 515-6; (Gilchrist) 528.

Armstrong College, Newcastle-upon-Tyne—*cont.*

Finance :

Additional funds, need of (Carrick) 338; (Gilchrist) 562, 567, 648.

Financial position (Gilchrist) 595-603, 622-3.

Sources of income (Carrick) 335-7, 395-9.

Grant from Northumberland County Council may be reduced (Carrick) 391-3.

Forestry Department (Carrick) 361-2, 408-9; (Gilchrist) 626-38.

Research Work conducted (Gilchrist) 721-3.

Scholarships tenable at (Gilchrist) 554.

Staff (Carrick) 388-9; (W. T. Lawrence) 7438-9.

Inadequate (Gilchrist) 522-7, 556, 562.

Students :

Agricultural Students' Association (Gilchrist) 717a.

Cost of instruction and residence (Gilchrist) 644-5.

Number of (Gilchrist) 664.

Previous education of, *see that title.*

Type of students and their after-careers (Carrick) 324-5, 356-7, 438-40; (Gilchrist) 557-61, 646-7, 665-7, 712-3.

ASHCROFT, Mr. WM. *Chairman of the Joint Committee of the British Dairy Institute, Reading.*

Evidence, 2336-2490.

ASPATRIA AGRICULTURAL COLLEGE, Carlisle.

Evidence received principally from (Smith-Hill) 7442-7584.

Constitution of College has become altered as a result of the growth of County Council institutions (Smith-Hill) 7552-4.

To allow College to collapse would be a pity from a public point of view (Smith-Hill) 7520-39.

Courses of Instruction (Smith-Hill) 7473-6, 7480, 7481-5, 7491-9, 7506-7, 7511, 7543-5, 7547-8, 7555-6, 7571-84.

Financial Position and Prospects (Smith-Hill) 7452-6, 7520-5.

Staff (Smith-Hill) 7471-2, 7541-2.

Students :

Fees (Smith-Hill) 7465-7, 7557-9.

Number of (Smith-Hill) 7445.

Residential accommodation for (Smith-Hill) 7468-9.

Type of student and their after-careers (Smith-Hill) 7446-51, 7470, 7477, 7537-9, 7563, 7567.

ATTITUDE OF AGRICULTURISTS and of others engaged in Agricultural Industries, towards—

For information as to the opinions of agriculturists on particular subjects, e.g., External Lectures, Experiments, Analyses, &c., see under the particular heading.

*Agricultural Education generally :

Agricultural classes do not value very highly facilities for obtaining the highest form of agricultural instruction (Hobhouse) 14849-50.

Among farmers there is a feeling of dissatisfaction with agricultural education, owing chiefly to the fact that instructors have not gained their full confidence (Eve) 12975-83, 13101-10.

Are beginning to appreciate newer methods (Tinniswood) 7149-53.

Are slowly beginning to appreciate agricultural education (Wheeler) 6428, 6445-6, 6460-3.

Complete reversal of opinion (Pennant) 6506; (W. P. Wright) 10130-2.

Dairying, instruction in, has had a good effect on the attitude of farmers (Pennant) 6549-52.

Desire for agricultural education would be greater if a local man would take the lead (Peter) 9820-1.

Education will in the future be taken greater advantage of (Mannington) 2115-6.

Extent to which farmers are beginning to consult the local agricultural college (Lawrence) 7403-5.

Farmer is more interested in the education of his labourer than of his son (Inskip) 3420a.

Farmers used to doubt whether a scientific person could teach the practical man, but are now beginning to see that the combination of the two is of great benefit (Burne) 5616-7.

Feel that the information given to students at some agricultural colleges is of a mischievous nature (Collinge) 5068a

Attitude of Agriculturists and of others engaged in Agricultural Industries, towards—cont.

Agricultural Education generally—cont.

- Has been a great change in the (*MacDonald*) 11784-6; (*Turnor*) 14341-4.
- Larger farmers appreciate the value of agricultural education (*Kidner*) 6015-7.
- Larger farmers appreciate the value of agricultural education more than the smaller men (*McCracken*) 9275-6.
- More agricultural education is encouraged the more the appreciation of it will grow (*Bickersteth*) 2995.
- More and more appreciated (*Simmons*) 8607.
- Not sanguine that farmers will send their sons, after school days, away from farm for any long course (*Acland*) 2828-9.
- Recognise much more widely value of agricultural education (*Turnor*) 14397-8.
- Very anxious to learn (*Eve*) 12979.
- Very distinct change; largely due to the fact that the advice that they now receive is much more satisfactory (*Sutton*) 4018c, 4066-75.
- Why the sons of small farmers do not attend agricultural classes (*Mannington*) 2107-18.
- Wishes generally to have his son at home as soon as possible after leaving school (*Foulkes*) 5717-8.

Instruction provided by :

- Aberystwyth, University College of Wales (*Davies*) 8252-5, 8256b, 8262, 8276-9, 8304, 8309-14, 8398-9; (*Roberts*) 8138, 8162.
- Armstrong College (*Carrick*) 326, 343, 358-9, 382-5, 394, 454; (*Gitchrist*) 574-5, 619; (*Tinniswood*) 7191b.
- Bangor, University College of North Wales (*Pennant*) 6506, 6535-7; (*Winter*) 6653b, j, 6659j, 6879a.
- Basing, Hampshire Farm School at (*D. T. Cowan*) 5130-7, 5140-2, 5187-90, 5207a, 5212, 5264-5, 5283-6.
- Bath and West and Southern Counties' Society (*Kidner*) 6062.
- "Bigod's Hall," Countess of Warwick's School (*Hacking*) 6931c, 6979, 6982, 6984.
- Birmingham University (*Collinge*) 5035a-c, 5074; (*Lodge*) 5482-3.
- Cambridge University (*Sapwell*) 241c, d, 242-3, 259, 287-8, 291-3; (*Wood*) 27-8, 33, 160-1.
- Dauntsey Agricultural School (*Phipps*) 9086c.
- Devon County Council (*Acland*) 2686-7, 2717-40.
- Eastern Counties' Dairy Institute (*J. A. Smith*) 14511b, 14529-31, 14567-9.
- Essex County Technical Laboratories (*Goodchild*) 1067i; (*Nicholas*) 953d, 1195-7; (*Raby*) 1108-15.
- Gloucester County Council (*Turner*) 7785-6.
- Harper-Adams Agricultural College (*Dugdale*) 4899; (*Foulkes*) 5726-9, 5731-3, 5754-6, 5924-6.
- Hereford County Council (*Peet*) 12361-4, 12475, 12477; (*J. W. Smith*) 12194-6.
- Holmes Chapel College of Agriculture and Horticulture (*Hill*) 1449-51, 1469-72; (*McCracken*) 9220, 9225-6; (*Ward*) 4602-5, 4624-33; (*Young*) 1265-9, 1303, 1440-2.
- Lancashire County Council (*Brockholes*) 13681-8, 13704, 13706-8, 13770-8; (*Hale*) 13299-305, 13579-81.
- Leeds University (*Bickersteth*) 2933, 2934a, 2966-71, 3135-9, 3142-5, 3147, 3242-3; (*Fisher*) 3002-6, 3017-28; (*Seton*) 3054b, 3055, 3074.
- Midland Agricultural and Dairy College (*Blackshaw*) 1672-5, 1689-94, 1709a, 1831; (*Cope*) 1650-3; (*Turnor*) 14292-8.
- Monmouth County Council (*Grant*) 10324, 10341-3.
- National Fruit and Cider Institute (*Turner*) 7816-7818.
- Newton Rigg, Cumberland and Westmorland Farm School at (*Howard*) 7074-5; (*W. T. Lawrence*) 7393-4, 7403-7; (*Tinniswood*) 7119.
- Reading University College (*Eady*) 9365, 9374-9, 9384; (*Keeble*) 4414, 4420; (*Percival*) 4113-6, 4219-21; (*Simmons*) 8655; (*Sutton*) 4018a, d.
- Ridgmont Agricultural Institute (*Druce*) 3558-60, 3563, 3637-40, 3704-8; (*Eve*) 13022a, 13025; (*Inskip*) 3341-2, 3345-8, 3428-35, 3479-85.
- Royal Agricultural College, Cirencester (*Kidner*) 6079-106.
- Somerset County Council (*Hobhouse*) 14891-904, 14969-71, 4987-91; (*Kidner*) 6036-9.

Attitude of Agriculturists and of others engaged in Agricultural Industries, towards—cont.

Instruction provided by—cont.

- South-Eastern Agricultural College (*Amos*) 886, 890-1, 899-903, 907-10, 916-8, 923-4; (*Dunstan*) 801; (*Hall*) 1480-2, 1526; (*W. P. Wright*) 10177-82.
- Sussex, West, *see that title*.
- Uckfield Agricultural and Horticultural College (*Mannington*) 1980-2, 1999-2001, 2052, 2056; (*Woodhead*) 2181-2, 2208-10, 2270-2.
- Wiltshire County Council (*Fitzmaurice*) 7840d.
- Worcester County Council (*Wheeler*) 6428, 6445-6, 6490-3.
- Worleston Dairy Institute (*Ward*) 4492.
- Relationship between Science and Practice (*Burne*) 5616-7; (*Eady*) 9418-28, 9473-5; (*Eve*) 13166-8; (*Kidner*) 6053-66; (*Langridge*) 10950-6; (*Peter*) 9793-4, 9814-6, 9822-3, 9856-8; (*Sapwell*) 306; (*J. W. Smith*) 12298-300; (*Simmons*) 8642-52, 8727-9; (*Stiby*) 12654-7.

AUSTRIA. See under Colonial and Foreign Countries.

BANGOR, UNIVERSITY COLLEGE OF N. WALES.

Evidence received principally from (*Pennant*) 6480-6649; (*Winter*) 6650-6906.

- Aberystwyth, relations with (*Pennant*) 6591-4; (*Winter*) 6878-9.
- Analyses (*Winter*) 6892-4.
- Boundary between, and Aberystwyth, *see under* Aberystwyth.
- Board of Agriculture, relations with (*Winter*) 6653e.
- Governing body (*Pennant*) 6533-4, 6603-5; (*Winter*) 6690-5, 6697-702, 6752-8, 6895-8.
- History of the formation of the Agricultural Department (*Brooke-Hunt*) 15558-9; (*Pennant*) 6482a, 6485-6a, 6487a, 6558-61; (*Winter*) 6653a.
- Earliest recipient of a grant from Board of Agriculture (*Brooke-Hunt*) 15558.
- Relations with neighbouring counties (*Pennant*, 6487a, 6488-9, 6491-2, 6521-3, 6568-75, 6616-9; (*Winter*) 6653f, 6696, 6703-7, 6752-8.
- Attitude of Agriculturists towards, *see that title*.
- Courses of Instruction (*Winter*) 6653g, 6747-51.
- Elementary school teachers, *see that title*.
- Dairy Schools at Llewenni, Sylfaen and Bangor (*Winter*) 6653c, 6654-9.
- History of the establishment of the Llewenni School (*Pennant*) 6482b, 6483-4, 6487, 6553-7.
- Relations with the College and County Councils, (*Pennant*) 6490.
- Students, number of (*Winter*) 6653k.
- Type of (*Pennant*) 6505.
- Success of students at R.A.S.E. Show, 1893 (*Pennant*) 6495a.
- Those at Sylfaen and Bangor have been abandoned (*Winter*) 6686-9.

External Work :

- Experiments (*Pennant*) 6385-7, 6493a, 6507-9; (*Winter*) 6659d.
- Distribution of reports of the (*Winter*) 6800-3.
- Effect of, on system of farming in the neighbourhood (*Winter*) 6659e.
- Results of, published as leaflets (*Pennant*) 6507.
- Lectures (*Pennant*) 6493-4, 6541; (*Winter*) 6653d, 6659a, 6876-7.
- Circulation of literature in connection with (*Winter*) 6659c.
- Effect of, on co-operation (*Winter*) 6659b, 6810-4.
- Farm (*Pennant*) 6497-9, 6512-5, 6538-40, 6563-7, 6588-90; (*Winter*) 6659h, i, 6738-46, 6837-40, 6852-8, 6887-8.
- Finance :
- Financial arrangements (*Winter*) 6698-707.
- Inadequacy of present grant from Board of Agriculture and Fisheries (*Winter*) 6661b-6663a.
- Sources of income (*Pennant*) 6519-20, 6606-11.
- Receipts from private sources (*Pennant*) 6558-61.
- As to the possibility of further (*Winter*) 6713-7.
- Work curtailed through lack of funds (*Winter*) 6659g.

Bangor, University College of N. Wales—cont.

Forestry Department (*Winter*) 6653g, 6659k, 6660-1a, 6729-31, 6736-7, 6880-3.

Requires development (*Winter*) 6663c, 6735.

Scholarships, tenable at (*Pennant*) 6576-81; (*Winter*) 6776a-80, 6868-71.

Staff (*Winter*) 6860, 6863-4.

Difficult to retain services of members of the (*Pennant*) 6494, 6516, 6524-9.

Inadequately paid (*Pennant*) 6495.

Students :

Fees (*Winter*) 6723.

Total cost to student (*Winter*) 6724.

Number of (*Winter*) 6653h, i, 6821, 6861-2, 6865-8.

Previous education of, *see that title*.

Residential arrangements (*Pennant*) 6500-3.

Type of student and their after-careers (*Winter*) 6725-8, 6781-8, 6822-33.

BARKER, Mr. B. T. P., M.A. *Director of the National Fruit and Cider Institute, Long Ashton, near Bristol.* (Qualifications of Witness, *see* 8407-8.) Evidence, 8405-8577.

BARNARD CASTLE. *See under* North-Eastern County School.

BASING, HAMPSHIRE FARM SCHOOL AT.

Evidence received principally from (D. T. Cowan) 5085-5293.

Board of Agriculture, relations with (D. T. Cowan) 5215-6.

Buildings (D. T. Cowan) 5088a, 5088d.

Directions in which work could be extended (D. T. Cowan) 5279-82, 5287-8.

History and aim of the School (D. T. Cowan) 5086-8, 5179, 5281.

Not situated on soil that is quite typical of the county (D. T. Cowan) 5088b, 5251-2.

Scheme of instruction, linking up elementary schools in Hampshire with University College, Reading, through evening continuation school and Basing Farm School (D. T. Cowan) 5271-8.

School could, if required, act for a group of counties (D. T. Cowan) 5247-54.

To a student who is going to be a farmer Basing gives a more valuable education than a university college (*Simmons*) 8593.

Value of instruction given (*Percival*) 4137, 4141.

Attitude of Agriculturists towards, *see that title*.

Courses of Instruction (D. T. Cowan) 5090, 5105-8, 5110-25, 5150, 5152-7, 5184-5, 5258-61, 5289-90.

Elementary school teachers, *see that title*.

Just what is wanted (*Simmons*) 8723, 8726.

Mainly practical (D. T. Cowan) 5174-81.

Time spent by students in doing manual labour could be better employed (*Swanwick*) 7629, 7698-703.

External Work (D. T. Cowan) 5126-7.

Dairy instruction (D. T. Cowan) 5209-12.

Exhibits at local shows (D. T. Cowan) 5140-3, 5187-10, 5293.

Farriery school (D. T. Cowan) 5171-3, 5205-8, 5213-8, 5219-24.

Lectures (D. T. Cowan) 5165-8, 5291-2.

Farm (D. T. Cowan) 5087, 5088c, 5144-51.

Finance :

Financial position (D. T. Cowan) 5100-4, 5194, 5225-38.

Received grant from Board of Education (D. T. Cowan) 5207, 5239-44.

Work has been hampered through want of funds (D. T. Cowan) 5151, 5165-70, 5192-4, 5261.

Reading University College :

Dairy students do not go on to (D. T. Cowan) 5161-4.

Instruction given at Basing is most useful for those students who go on to (*Sutton*) 4021-3.

Relations between Reading and Basing (*Childs*) 3851a, 3851c, 3852, 3985-7; (D. T. Cowan) 5109; (*Percival*) 4141.

Scholarships from Basing tenable at (D. T. Cowan) 5109a, 5195-201.

Scholarships tenable at (D. T. Cowan) 5263-5.

Staff (D. T. Cowan) 5092-4, 5126-7, 5176-9, 5186, 5261.

Basing, Hampshire Farm School at—cont.**Students :**

Fees (D. T. Cowan) 5095-6.

Higher, charged to students from outside the county (D. T. Cowan) 5096.

Number of (D. T. Cowan) 5160.

Residential accommodation for (D. T. Cowan) 5088d, 5089, 5097-9, 5194, 5248-50.

Type of student and their after-careers (D. T. Cowan) 5090a, 5091, 5129, 5137a, 5138-9, 5159-60, 5182-3, 5201a, 5202-4, 5262-5; (*Percival*) 4137-8.

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.

Evidence received from (Acland) 2617-2926, *representing the Society.*

Attitude of agriculturists towards, *see that title*.

Dairy and farriery schools, started by the (Acland) 2628-38.

Effect of instruction provided by the (Acland) 2762-2771, 2776-80, 2786.

Experiments (Acland) 2618-22, 2895-6.

Publications of the (Acland) 2623-7, 2892-4.

BEAMINSTER GRAMMAR SCHOOL. *See under* Dorset.

BEAVEN, Mr. E. S., of Warminster, Wilts. (Qualifications of witness, *see* 14129-35, 14163-4, 14167-8, 14219-20.)

Evidence, 14129-14220.

BEDFORDSHIRE. *See under* Ridgmont Agricultural Institute.

BEE-KEEPING. *See under* British Bee-keepers' Association and Subjects of Instruction.

BELGIUM. *See under* Colonial and Foreign Countries.

BENSON, Mr. MILES. *Manager and Chief Instructor of the British Dairy Institute, Reading.* (Qualifications of witness, *see* 2555-60.)

Evidence, 2491-2616.

BERKELEY HUNT AGRICULTURAL SOCIETY. *See under* Gloucestershire.

BERKSHIRE.

Evidence received principally from (Dunn) 11915-12013.

Classes were formerly held in:

Dairying (Dunn) 11964-5.

Farriery (Dunn) 11965-7; (*Wheatley*) 12916-24, 12933, 12937-8.

Instruction in farriery should be continued (*Wheatley*) 12922, 12928.

Scholarships for agriculture were awarded (Dunn) 11969-77.

Education Committee (Dunn) 11939, 11945-50.

Finance :

Council anxious to promote agricultural interest, but are unable to do so owing to lack of funds and heavy expenditure on secondary schools (Dunn) 11917-31, 11951-2, 11955-63, 11979-80, 11984-95, 12007.

Expenditure on agricultural education has been decreasing year by year (Dunn) 11919-20, 11960-2, 11977-8.

Present provision of agricultural education is insufficient, but could not be increased from local funds (Dunn) 11932-8.

Would welcome any increase in the amount available for agriculture (Dunn) 11963, 11968.

Reading University College, relations with (Dunn) 11939-44, 11977, 11987-90.

BICKERSTETH, Mr. JOHN. *Clerk to the County Council for the East Riding of Yorkshire, and one of the Joint Clerks to the Yorkshire Council for Agricultural Education.*

Evidence, 2927-2998, 3080-3300.

"BIGOD'S HALL," COUNTESS OF WARWICK'S SCHOOL AT DUNMOW.

Evidence received principally from (Hacking) 6907-6996.

- Aim of instruction (*Hacking*) 6908, 6910, 6939b-d.
- Analyses (*Hacking*) 6937a, 6938-9.
- Attitude of agriculturists towards, *see that title*.
- Courses of instruction, with information as to how the various subjects are treated (*Hacking*) 6920-8, 6930-7, 6939a; (*Nicholas*) 1050-6.
- Experimental plots (*Hacking*) 6931b.
- Financial position and prospects (*Hacking*) 6908-10, 6910a, 6916-8, 6945-6, 6956-63, 6981, 6986-7.
- Desirable that the school should be placed on a more permanent basis (*Hacking*) 6957-78.
- Essex County Council, grants from (*Nicholas*) 1226-7.
- Relations with Board of Education (*Hacking*) 6910a, 6945, 6949-55, 6964.
- Scholarships tenable at (*Hacking*) 6915.
- Need of more (*Hacking*) 6939f.
- Staff (*Hacking*) 6929, 6933-4.
- Students:
 - Fees (*Hacking*) 6919.
 - Number of (*Hacking*) 6940.
 - Residential accommodation for (*Hacking*) 6912-4.
 - Type of student and their after-careers (*Hacking*) 6910b, 6911, 6939e, 6941-4, 6947-9; (*Nicholas*) 1052-6.

BIOLOGY. *See under* Subjects of Instruction.

BIRMINGHAM, UNIVERSITY OF.

Evidence received principally from (Collinge) 5034-5084; (Lodge) 5472-5541.

- Advisory Board of Agriculture (*Collinge*) 5035c, 5038, 5077-9; (*Lodge*) 5517-9, 5473c.
- Counties represented on (*Collinge*) 5077-9.
- Future development as regards agriculture (*Collinge*) 5081-4, 5035f, 5036, 5049, 5062-3; (*Lodge*) 5473.
- Financial prospects (*Lodge*) 5484-91.
- Money is the vital question (*Lodge*) 5473d.
- Schemes for formation of a department of agriculture and their probable cost (*Lodge*) 5473a, 5474-5, 5493-5502, 5508-11, 5520-4.
- Length of residence required for a degree (*Lodge*) 5125-30.
- Department of Economic Zoology:**
 - Attitude of agriculturists towards, *see that title*.
 - Financial position (*Collinge*) 5036a, 5037-9, 5047, 5055-60, 5075-84; (*Lodge*) 5473b.
 - History of the formation of (*Collinge*) 5035.
 - Relations with neighbouring counties (*Wheeler*) 6465. (*See also* Advisory Board above).
 - Gloucester, work in, has been dropped (*Collinge*) 5031.
 - Scope of work, at present, conducted (*Collinge*) 5035d-f, 5040-4, 5053-4.
 - Number of inquiries received and reports distributed (*Collinge*) 5035b, 5048.

BLACKSHAW, Mr. J. F., F.C.S., A.S.I. *Principal of the Midland Agricultural and Dairy College, King-ston, Derby.* (Qualifications of witness, *see* 1815-7.)

Evidence, 1062-1833.

BOARD OF AGRICULTURE AND FISHERIES.

Evidence received from (Rogers) 15116-15436; (Brooke-Hunt) 15515-15690, representing the Board.

For information as to the control exercised by the Board of Agriculture over agricultural education, see under Organisation, and as to the Grants given for agricultural education see under Expenditure.

- History of the formation of the Agricultural Department of Privy Council, subsequently the Board of Agriculture (*Craigie*) 13176b, 13177b.
- Veterinary staff of, might work in closer contact with the colleges (*Winter*) 6906.
- Whether the Board should have a staff of experts to deal with outbreaks of animal and other diseases (*Winter*) 6899-906.

Educational Branch:

- Inspection work (*Brooke-Hunt*) 15573-7.
- Larger staff will have to be employed (*Craigie*) 13200-3.
- Staff and work of the (*Brooke-Hunt*) 15519-26, 15529, 15531, 15534-5, 15537-41.

Board of Agriculture and Fisheries—cont.**Honorary Agricultural Correspondents:**

- Duties of the, and assistance rendered to the Board (*Rogers*) 15132-51.
- Might assist in spreading a knowledge of the publications of the Board and the assistance available for agriculturists (*Brockholes*) 13757-13758; (*Dugdale*) 4969-72, 5027-33; (*Mill*) 6347-8, 6396-8; (*Simmons*) 8732-8.
- Type of man employed as (*Swanwick*) 7666-8, 7742-5, 7749.
- Value of the, to agriculturists and others (*Acland*) 2676, 2711, 2774-5, 2787-8, 2804-7; (*Amos*) 947; (*Carrick*) 500-2; (*Drewitt*) 12168-9; (*Eady*) 9381-3; (*Nicholas*) 1223-5; (*Péet*) 12507-11; (*Peter*) 9881-2; (*Wheeler*) 6474-9; (*Winter*) 6804-5; (*Wood*) 233-6, 238.

Intelligence Branch:

- Agricultural colleges, information and assistance received from (*Rogers*) 15152-62, 15277-80.
- Exhibits at agricultural shows (*Rogers*) 15324-31, 15347-8, *see also* (*Acland*) 2744-5, 2789-90, 2792-3.
- General correspondence, information obtained by means of (*Rogers*) 15163-5.
- Information disseminated by means of the Press and in other ways (*Rogers*) 15202-7, 15213.
- Insect and fungoid pests, &c., information and advice given as regards (*Rogers*) 15130-1.
- Library of the Board may be consulted by agriculturists (*Rogers*) 15154-6, 15280.
- Milk-testing scheme (*Rogers*) 15267-9, 15271-5, 15346, 15349-53.
- Opposition to (*Rogers*) 15270, *see also under* Analyses.
- Use made of, by farmers (*Foulkes*) 5874-7; *see also under the various institutions and counties, Analyses.*
- Staff and scope of the work of (*Rogers*) 15117-29, 15258, 15307-20, 15358-62.

Publications:

- Annual reports (*Brooke-Hunt*) 15580-1; (*Rogers*) 15196-201, 15215-8, 15227, 15231-2, 15239, 15246-7, 15265-6, 15294-6.
- Distribution of (*Acland*) 2804-5, 2807, 2810-24, 2923-6; (*Brockholes*) 13712-3; (*Dugdale*) 4941-3, 4965-9; (*T. H. Middleton*) 15475-7; (*Péet*) 12462-6; (*Simmons*) 8736-8; (*Turnor*) 14435-8.
- Journal (*Rogers*) 15166-80, 15261.
- Leaflets (*Acland*) 2924-6; (*Drewitt*) 12156-60; (*Eve*) 13005-6; (*Gilchrist*) 714-7; (*Lawrence*) 7399-401; (*Peter*) 9880, 9883-9; (*Reid*) 14627; (*Rogers*) 15182-95, 15215, 15223-5, 15233-6, 15259-61, 15265-6, 15297; (*W. P. Wright*) 10190-2.
- Market Returns (*Eady*) 9384-91, 9437-41; (*Rogers*) 15354-7; (*Swanwick*) 7642, 7745-8.
- Other publications of the Board (*Rogers*) 15262-4.
- Sent to local authorities (*Brooke-Hunt*) 15580-1; (*Rogers*) 15207-14, 15217, 15219-23, 15226-30, 15236-9.
- Whether the, are made to pay (*Rogers*) 15227, 15231, 15240-5, 15248-57.

BOARD OF EDUCATION.

Evidence received from (Ogilvie) 15690-16133, representing the Board.

- Attitude of, towards agricultural education (*Phipps*) 9118, 9189-92.
- Do not put pressure upon local authorities but hold out considerable inducements and endeavour to persuade them (*Ogilvie*) 15879-93.
- Examination in agriculture (Subject XXIV.) (*Ogilvie*) 15958-80, 16107-9.
- For a long period the, and the Science and Art Department have made efforts with a view to benefitting agriculture (*Ogilvie*) 15724-5, 15872-8, 16048-54; *refer also to* (*Craigie*) 13176a.
- Have recently done a great deal to assist agricultural education (*J. A. Smith*) 14532.
- Machinery used to invite the co-operation of persons interested in any branch of education (*Ogilvie*) 15728-9, 15145-8.
- Powers of the Boards of Agriculture and Education as regards agricultural education, *see under* Organisation.
- Staff of inspectors (*Ogilvie*) 15730-1, 15743-4.

Board of Education—cont.

- Steps that would be taken by, to ensure that a County Council were not neglecting agricultural education (*Ogilvie*) 15772-80.
- "Suggestions on Rural Education," by Mr. T. S. Dymond (*Ogilvie*) 15690e, 15918, 16117-9
- Usually communicate with the local authority but when necessary get in touch with local managers (*Ogilvie*) 15948-57.
- Whether the, could assist the Royal Veterinary College (*Ogilvie*) 15928-30, 15943-5.
- Work of, in connection with the Treasury grants to universities and university colleges (*Ogilvie*) 15734-15739, 16110-3.

Agricultural Work of County Councils :

- Aid given to local authorities who organise :
- Classes meeting two or three times weekly in day or evening throughout the session (*Ogilvie*) 15690l, 15695c-f.
 - Short continuous courses of work, e.g., travelling dairy schools and winter schools for young farmers (*Ogilvie*) 15690k, 15695c-f, 15826-40.
 - Arrangements made to afford aid and encouragement for the establishment of facilities for instruction of students able to devote a portion of their time to study (*Ogilvie*) 15690i.

See also under Grants below.

Elementary Schools :

- Devoting much attention to the training of teachers engaged in rural areas (*Ogilvie*) 15690o-p, 15695a-b, 15707, 15797-806.
 - Do not encourage elementary school teachers to attend classes in nature study (*Winter*) 6659g, 6684-5.
 - Recognise the need for elasticity in curriculum of elementary schools (*Ogilvie*) 15690d.
 - Work of, as regards rural elementary schools (*Ogilvie*) 15690c-d.
- Refer also to Previous Education—Elementary, and to Elementary School Teachers.

Grants :

- Endeavouring to replace system of grants for separate subjects by a system based on progressive courses of study (*Ogilvie*) 15695c.
- Grants are calculated upon a very elastic system (*Ogilvie*) 15690n, 15695f.
- Grants are intended to bear a fair proportion to the total expense incurred, alike in urban and rural areas (*Ogilvie*) 15983-9.
- Grants to day technical classes (*Ogilvie*) 15696a, 16102-6.
- Grants to institutions providing technical instruction in agriculture (*Ogilvie*) 15724-7.
- Grants to technical institutions (*Ogilvie*) 15696b, 16102-6.
- Make it a rule that teacher's salary does not depend directly on the amount of the Board's grant (*Ogilvie*) 15981-2.
- Offer, with the authority of the Treasury, to pay grants upon certain principles set forth in the regulations (*Ogilvie*) 16018-24.
- Possible that agricultural institutions may seek grants from Board of Education because Board of Agriculture have no funds (*Ogilvie*) 15766-15771.
- Recognise the work of an institution or area as a whole (block grant system) (*Ogilvie*) 15695c-f, 15946-51, 15983-9.
- Advantage of such a system (*Ogilvie*) 15847-53.

Higher Elementary or Secondary Schools :

- Desire to cultivate the assimilation of the curriculum of secondary schools to the requirements of the pupils (*Ogilvie*) 15690h.
 - Provision made for higher elementary schools (*Ogilvie*) 15690c, 15841-6, 16058-9.
 - Secondary school regulations (*Ogilvie*) 15690g.
- Refer also to Previous Education—Secondary.

Technical Classes or Institutions :

- Function of a technical institution (*Ogilvie*) 15696b.
 - Supervision exercised by, over institutions providing technical instruction (*Ogilvie*) 15723.
- See also under Grants above.

BRADLEY, Miss EDITH. *Late Warden of the Lady Warwick Hostel, Reading, and Studley Horticultural College, Warwickshire.* (Qualifications of witness, see 8747-50, 8752, 8783-4.)

Evidence, 8745-8854.

BREDONS NORTON, SCHOOL OF GARDENING AT.

Evidence received principally from (Crooke) 4691-4867.

- Aim of, and courses of instruction (Crooke) 4694c, 4697-702, 4717-20, 4741-4, 4754-62, 4768-70, 4797-800, 4827-33, 4850-4.
- Financial position (Crooke) 4695-6, 4708-13, 4822-4826, 4839-42.

Students :

- Fees (Crooke) 4706.
- Number of (Crooke) 4703.
- Residential accommodation for (Crooke) 4704-5.
- Type of student and their previous education (Crooke) 4714-6, 4787-92, 4862-7.

Women's International Agricultural Club in connection with the School of Gardening :

- Aim of, and number and type of members (Crooke) 4721-43, 4843-9, 4854-61.

BRISTOL UNIVERSITY COLLEGE.

Evidence received principally from (Morgan) 5929-6010.

- Is not the most suitable centre for county of Gloucester (*Swanwick*) 7761-2.
- National Fruit and Cider Institute, relations with (*Barker*) 8438-9, 8527-8 ; (*Morgan*) 5932d, 5981.
- Projected lines of development (*Morgan*) 5932a, 5932c-d, 5933-9, 5940-1, 5945-51, 5963-6, 5984, 5993-6004.
- Financial prospects (*Morgan*) 5959-60, 5985-7, 6005-6.
- Royal Agricultural College, Cirencester, relations between (*Morgan*) 5940-1, 5945-7, 5950-1, 5961-3, 5982-3, 5988-95.
- Staff (*Morgan*) 5967-70, 5974-80.
- What the College is and what it hopes to become (*Morgan*) 5942-4, 5948.
- Work bearing on agriculture which has been carried out (*Morgan*) 5932, 5932b.

BRITISH BEE-KEEPERS' ASSOCIATION.

Evidence received from (Reid) 14583-14722 ; (T. W. Cowan) 14723-14838, representing the Association.

- Board of Agriculture, relations with (T. W. Cowan), 14726-30, 14738-42 ; (Reid) 14627.
 - County Associations (Reid) 14598-600.
 - County work can better be carried out through the (T. W. Cowan) 14782-3 ; (Reid) 14684, 14722.
 - In counties where there are no, the central body endeavour to carry on the work and start an association (T. W. Cowan) 14782-3 ; (Reid) 14597, 14620-2.
 - Relations between, and the central body (T. W. Cowan) 14757-8 ; (Reid) 14599.
 - For example of the work of a County Association, see under Surrey.
 - Encouragement given to co-operation (Reid) 14614-5.
 - Examinations of the (T. W. Cowan) 14731-6, 14609.
 - Experimental apiary at Swanley (T. W. Cowan) 14744-8.
 - Financial position (T. W. Cowan) 14604, 14752, 14757.
 - Income insufficient (T. W. Cowan) 14759-60 ; (Reid) 14620. (See also Suggests, &c., below.)
 - Publications of the (T. W. Cowan) 14737, 14834-8 ; (Reid) 14680.
 - Suggests that the State should assist bee-keeping through the Association (T. W. Cowan) 14759-14760, 14778-81, 14784-6 ; (Reid) 14626, 14671, 14689-90.
 - Great increase in the production of honey would result from the further diffusion of information (T. W. Cowan) 14786a-7.
 - Work in connection with shows, and personal assistance to bee-keepers (T. W. Cowan) 14750-1, 14783 ; (Reid) 14605-7, 14611, 14678-81.
- See also under Subjects of instruction, Bee-keeping.

BRITISH DAIRY FARMERS' ASSOCIATION. See under British Dairy Institute, Governing Body.

BRITISH DAIRY INSTITUTE, READING.

Evidence received principally from (Ashcroft) 2336-2490; (Benson) 2491-2616.

Board of Agriculture, relations with (Ashcroft) 2401-2; (Benson) 2573-4.

Building accommodation (Ashcroft) 2356-63, 2375-8, 2380-2.

Direction in which operations could be extended (Ashcroft) 2405, 2459.

Exhibits at Dairy Show (Benson) 2540-3.

Governing body (Ashcroft) 2366, 2383-96.

Instruction given has been of decided value to dairying industry (Ashcroft) 2398-400, 2410.

Courses of Instruction (Ashcroft) 2368-74, 2429-35, 2452, 2457; (Benson) 2492-5, 2498-500, 2502-16, 2569-74, 2594-603.

Examinations (Ashcroft) 2368-9; (Benson) 2536-2538.

Instruction could be made more complete if Institute kept cows and was connected with a creamery (Ashcroft) 2429-35, 2481-90.

Financial Position (Ashcroft) 2355, 2404, 2406, 2446-7. Cost of milk has increased as result of transfer from Aylesbury to Reading (Ashcroft) 2348.

Research Work (Benson) 2496-7, 2584-93, 2609-16.

Students :

Fees (Ashcroft) 2403, 2467-71.

And cost of residence (Ashcroft) 2420-4; (Benson) 2567-8.

Number of (Ashcroft) 2342, 2345, 2450-1; (Benson) 2532.

Residential accommodation for (Ashcroft) 2356-2363; (Benson) 2565-8.

Type of student and their after-careers (Ashcroft) 2349-50, 2353, 2364, 2485; (Benson) 2501, 2509, 2528-39, 2563-4.

University College, Reading, relations with (Ashcroft) 2346-8, 2351-2, 2355a, 2366, 2445-7, 2461-6, 2480, 2482-4; (Benson) 2495-7, 2511; (Childs) 3812e, 3813, 3827-9; (Sutton) 4103.

BROCKHOLES, Mr. W. FITZHERBERT. *Chairman of the Lancashire Farmers' Association and Member of the Lancashire County Council.* (Qualifications of witness, see 13661-4, 13681-3.)

Evidence, 13660-13827.

BROOKE-HUNT, Mr. A. E. *A Superintending Inspector of the Board of Agriculture and Fisheries and Secretary to the Committee.* (Qualifications of witness, see 15515-8, 15584.)

Evidence, 15515-15690.

BROWN, Mr. EDWARD, F.L.S. *Assistant Director of the Agricultural Department, and Lecturer in Poultry-Keeping at the University College, Reading.* (Qualifications of witness, see 6155b.)

Evidence, 6152-6291.

BURNE, Colonel S. T. H. *Chairman of the Board of Governors of the Harper-Adams Agricultural College, Newport, Salop.*

Evidence, 5542-5685.

CAMBRIDGE COUNTY SCHOOL FOR BOYS (T. H. Middleton) 15501-13; (Wood) 115-6, 226-32.

CAMBRIDGE, UNIVERSITY OF.

Evidence received principally from (Wood) 1-238; (Sapwell) 239-314; (T. H. Middleton) 15458-15514.

Analyses, no routine (Wood) 95.

Buildings, need of (T. H. Middleton) 15459g, 15460a; (Wood) 21, 24.

Governing body (Wood) 62-4, 137-8, 206-10.

History of foundation of the Agricultural Department (Wood) 1.

Influence exerted over neighbouring counties (Wood) 208-11.

Work done at, is thought highly of (Sapwell) 241a, 242, 254-6, 257-9, 291-3. (See also under Attitude of Agriculturists.)

Cambridge, University of—cont.

Attitude of Agriculturists towards, *see that title.*

Courses of Instruction (T. H. Middleton) 15458a, c, e; (Wood) 2-5, 31-2, 101, 108-113, 168-72, 175-6, 194.

Elementary school teachers, *see that title.*

Examinations (Wood) 75-8, 80-4, 102, 215-9.

External Work :

Experiments (T. H. Middleton) 15459e; (Wood) 34-41. (See also under Norfolk.)

Lectures (Sapwell) 241d, 243-4; (Wood) 45-6, 48, 96-9, 103, 182-4, 187.

Farm (T. H. Middleton) 15458d, 15459e; (Wood) 30-2, 92-4, 152.

Cost of (T. H. Middleton) 15459d.

Use made of, for demonstrating to farmers (T. H. Middleton) 15458f, 15459a; (Wood) 27a, 28, 160-1.

Finance :

Financial position (Wood) 122-31.

Require increased grant (Wood) 42.

Grounds for (Wood) 85, 87-9.

Sources of income (Wood) 24-5, 67, 199-202.

Research Work (Beaven) 14159-62; (Humphries) 13836, 13874; (Sapwell) 241d, 254-6; (Wood) 37-8, 161, 198, 203.

Scholarships tenable at (T. H. Middleton) 15458c; (Wood) 4-6, 10-15, 195-7, 224.

Staff (Wood) 56.

Inadequate (Wood) 22-4.

Inadequately paid (Wood) 86.

Students :

Fees and cost of instruction (Wood) 141-51.

As to question of raising (Wood) 70-3.

Number of (Wood) 7-9.

Previous education of, *see that title.*

Type of student and their after-careers (T. H. Middleton) 15458b-d; (Sapwell) 297-306; (Somerville) 15100; (Wood) 16-20, 57-8, 60-1, 100, 105-7, 114, 162-7, 220-3.

CAMPBELL, Professor J. R., B.Sc. *Assistant Secretary in respect of Agriculture under the Department of Agriculture and Technical Instruction for Ireland.*

Evidence, 11135-11414.

CANADA. *See under Colonial and Foreign Countries.*

CARRICK, Mr. T. *Alderman of the Northumberland County Council, and a Member of the Council and Agricultural Committee of the Armstrong College, Newcastle-upon-Tyne.*

Evidence, 315-516.

CAVE, Mr. T. W., F.R.C.V.S. *Professor of Veterinary Science at the South-Eastern Agricultural College, Wye.* (Qualifications of witness, see 9485-9, 9503.)

Evidence, 9485-9584.

CHELMSFORD LABORATORIES. *See Essex County Technical Laboratories, Chelmsford.*

CHEMISTRY. *See under Subjects of Instruction.*

CHESHIRE.

Elementary school teachers, provision of instruction for, *see that title.*

History of the commencement of agricultural education in, before the County Council took up the work (McCracken) 9209-18.

School gardens (Ward) 4614-21.

System of inspection (Young) 1410-4.

See also Holmes Chapel, College of Agriculture and Horticulture, and Worleston Dairy Institute.

CHILDS, Mr. W. M., M.A. *Principal of the University College, Reading.*

Evidence, 3811-3922, 3929-4014.

CIDER INSTITUTE. *See National Fruit and Cider Institute.*

CIDER-MAKING. *See under* National Fruit and Cider Institute and Subjects of Instruction.

CIRENCESTER COLLEGE. *See* Royal Agricultural College, Cirencester.

CIRENCESTER GRAMMAR SCHOOL. *See under* Gloucestershire, Rural Science Class at.

COCKBURN, The Hon. Sir JOHN A., K.C.M.G. *Late Minister of Agriculture, South Australia.*

Evidence, 10522-10598.

COCKLE PARK FARM. *See under* Armstrong College.

COLLEGE OF AGRICULTURE AND HORTICULTURE, HOLMES CHAPEL. *See under* Holmes Chapel.

COLLEGE POULTRY FARM, THEALE. *See under* Reading University College.

COLLINGE, Mr. WALTER E., M.Sc. *Head of the Department of Economic Zoology, University of Birmingham.*

Evidence, 5034-5084.

COLONIAL AND FOREIGN COUNTRIES, AGRICULTURAL EDUCATION IN.

Agricultural societies on the Continent are actively engaged in the work of agricultural education (*T. H. Middleton*) 15442c.

Almost impossible to ascertain amount spent on agricultural education in foreign countries (*Rogers*) 15381-8.

Assistance given in, to instruction in bee-keeping (*T. W. Cowan*) 14760-3.

At many institutions abroad no fees are charged to students coming from the country or state in which the institution is situated (*Brown*) 6165c.

Poultry-keeping, instruction in, abroad (*Brown*) 6165b.

Suggests the establishment of a Readership in Tropical Agriculture at universities in this country (*H. S. Lawrence*) 16187-9, 16215-8, 16227-9.

Systems practised abroad are scarcely comparable to that existing in this country (*Rogers*) 15249, 15367-71.

Veterinary education, assistance given by colonial and foreign governments to (*McFadyean*) 9703, 9712.

Australia :

Evidence received principally from (Cockburn) 10522-10598.

Assistance given by agricultural colleges and the Government Department to actual farmers (Cockburn) 10542, 10544-6.

Early steps taken in every grade of education to teach agriculture (Cockburn) 10526-8.

Farmers are mostly working farmers (Cockburn) 10576-8.

Agricultural Colleges :

Courses of instruction (Cockburn) 10528c, 10529, 10534-5, 10540-1, 10555, 10582-4.

Financial assistance received from the Government (Cockburn) 10538-9, 10549-10554.

Students :

Fees (Cockburn) 10531.

Type of student and their after-careers (Cockburn) 10532-3, 10536-7, 10580-1, 10590-2.

Undoubtedly popular (Cockburn) 10589.

Elementary Schools :

Manual training in (Cockburn) 10528a.

Training of teachers (Cockburn) 10548.

Experimental Farms (Cockburn) 10585-8.

Scholarships (Cockburn) 10529a, 10530-1.

Secondary and Technical Schools (Cockburn) 10528b, 10563-6.

Austria (*Rogers*) 15407-9, 15430.

Colonial and Foreign Countries, Agricultural Education in —cont.

Belgium, agricultural education in: with information as to how far the conditions are comparable with those in this country (*Rogers*) 15368-96, 15426-9.

Success of co-operation and small-holding movement (*Turnor*) 14260-3.

Canada (*Craigie*) 13221-5; (*Gilchrist*) 660-2.

Farmers' institutes (*Brown*) 6171b.

Denmark (*Rogers*) 15420-1.

Danes practise that the first step is that the ordinary education of a boy who is to be trained in agriculture should be thorough (*Craigie*) 13230.

Excellent practical results obtained from experiments conducted by the Royal Agricultural Society of Denmark (*Beaven*) 14151-5.

France (*Rogers*) 15377-8, 15382, 15390-3.

Agricultural education in, and comparison with the system in England (*Craigie*) 13205-10, 13234-59.

How far the conditions in, are comparable with those in this country (*Rogers*) 15368-71, 15377-96.

Use made of experimental plots by small farmers in (*Hall*) 1531.

Germany (*T. H. Middleton*) 15442d, 15443-8, 15480-1; (*Rogers*) 15397-403.

Agricultural Institute at Dahlem (*T. H. Middleton*) 15449f.

Large number of qualified teachers available (*T. H. Middleton*) 15446-8.

Research work conducted in (*Beaven*) 14143-50.

Students, type of (*T. H. Middleton*) 15450.

Veterinary education in (*T. H. Middleton*) 15464-7.

Prussia (*T. H. Middleton*) 15442b, 15448.

Saxony (*T. H. Middleton*), 15442a, 15449g.

Experiment stations in (*T. H. Middleton*) 15448a.

Holland :

Description of Dutch winter school (*Swanwick*) 7612-20, 7622-5, 7646-53.

Market gardening schools (*Bradley*) 8768-9.

Hungary :

Much impressed with the good results from system of agricultural education (*Craigie*) 13230-3.

India :

Evidence received principally from (*H. S. Lawrence*) 16134-16272; (*Moreland*) 16273-16306.

Agricultural and live stock shows (*H. S. Lawrence*) 16262-5.

Attitude of the Government of India to agricultural education (*H. S. Lawrence*) 16135-8, 16227-9; (*T. H. Middleton*) 15451-8; (*Moreland*) 16291-2.

Highly desirable that European experts should be given opportunity, by means of "study-leave," for keeping knowledge up-to-date (*Mead*) 16272.

In all provinces of India agricultural education is under the Department of Agriculture (*H. S. Lawrence*) 16266-7; (*Moreland*) 16301-6.

Inspector-General of Agriculture for India (*H. S. Lawrence*) 16204-5.

Local agricultural association (*H. S. Lawrence* and *Mead*) 16253-4. Research Institute of Pusa (*H. S. Lawrence*) 16206, 16252; (*T. H. Middleton*) 15451, 15454.

School gardens and school shows (*H. S. Lawrence*) 16211-2.

Work of agricultural departments in United Kingdom in supplying teachers for India (*H. S. Lawrence*) 16198-203, 16225-6; (*Mead*) 16271-16272.

Bombay.

Co-operative movement and agricultural banks (*H. S. Lawrence* and *Mead*) 16166-72, 16268-70.

Elementary school teachers (*H. S. Lawrence*) 16213.

Expenditure of Department of Agriculture (*H. S. Lawrence*) 16135-8.

Experimental farms (*H. S. Lawrence*) 16149-65, 16205-9, 16246-51.

Colonial and Foreign Countries, Agricultural Education in—*cont.*India—*cont.*Bombay—*cont.*

- Itinerant advisers (*H. S. Lawrence*) 16210-2.
 Poona College (*H. S. Lawrence*) 16139, 16142, 16144, 16174-6, 16220-4, 16233-4.
 Attended by members of the Indian Civil Service (*H. S. Lawrence*) 16177-82.
 Staff (*H. S. Lawrence*) 16140-1, 16198-203.
 Students (*H. S. Lawrence*) 16143-9, 16190-16196, 16230-3, 16245.

United Provinces of Agra and Oudh:

- Cawnpore College (*Moreland*) 16295-9.
 Students (*Moreland*) 16288-90.
 Co-operative credit societies (*Moreland*) 16276-16287, 16293-4.
 Duties of the Director of Agriculture (*Moreland*) 16274-5.

Italy (*Turnor*) 14259.

- Instruction for soldiers (*Rogers*) 15411-5.
 Suggests that a similar system might be adopted in this country (*Reid*) 14637-55, 14695-700.
 Perugia, description of the demonstration farm at (*Turnor*) 14325-6, *see also* 14310-24.
 Success of lectures after the farmers had been interested in the work of the colleges (*Turnor*) 14255.

New Zealand:

- Evidence received principally from (*Hogben*) 14040-14128.

Department of Agriculture:

- Does not deal with purely educational matters (*Hogben*) 14047-50, 14128.
 Experimental farms (*Hogben*) 14048, 14077, 14094-9, 14125-8.

Education Department:

- Agricultural College (*Hogben*) 14074-6, 14082, 14091-3, 14099, 14114-7.
 Attitude of farmers towards agricultural education (*Hogben*) 14110-4.
 Dairy college of university rank about to be established (*Hogben*) 14100-2.
 Deals with every grade of education (*Hogben*) 14041, 14046, 14049.
 Education is mostly free (*Hogben*) 14056, 14077-9, 14098.
 Ordinary education of the agriculturists (*Hogben*) 14080-3.
 Primary schools:
 Elementary practical agriculture (*Hogben*) 14053-60, 14084-90, 14107-9, 14119.
 Nature study (*Hogben*) 14051-3, 14105-6.
 Secondary schools (*Hogben*) 14056, 14083, 14114, 14120.
 State encourages, by means of grants, agricultural education from elementary school up to the university (*Hogben*) 14041-4.
 Training of teachers (*Hogben*) 14061-75, 14103-4.

United States (*Craigie*) 13213-20, 13226; (*T. H. Middleton*) 15448b.

- Agricultural industry differs very widely from that in this country (*T. H. Middleton*) 15514.

Almost every State possesses:

- (a) Experimental Station (*T. H. Middleton*) 15448d, f, 15449a, 15471-2, 15504-5, 15514.
 (b) Land Grant College (*T. H. Middleton*) 15448d, 15449e.

Assistance given to educational and experimental work (*Brown*) 6188-92, 6205-11, 6253.

Association of teachers and others associated with educational and experimental work (*T. H. Middleton*) 15449b.

Bee-keeping in (*T. W. Cowan*) 14768-70.

Colleges recognise that the whole subject "agriculture" is too wide for one man (*T. H. Middleton*) 15448e.

Department of Agriculture, Washington (*T. H. Middleton*) 15448c, 15449d, 15468-70.

Distribution of publications (*T. W. Cowan*) 14770-7.

Farmers' institutes (*Brown*) 6174b; (*T. H. Middleton*) 15498-501.

Importance attached to biology in (*Collinge*) 5069a, 5070-3.

Research work (*Brown*) 6166a, 6167-71a; (*Reid*) 14630-7.

Colonial and Foreign Countries, Agricultural Education in—*cont.*United States—*cont.*

Students:

- Fees (*Brown*) 6165c, 6212-4, 6233.
 Provision is made whereby poor students are able to obtain employment in order to pay for board and lodgings (*Brown*) 6165d, 6166, 6234-5.

West Indies (*Hamel-Smith*) 8966-72, 8978-9.

COMPANY OF FARRIERS, *see* Farriers, Worshipful Company of.

CONSULTATIVE COMMITTEE OF THE BOARD OF AGRICULTURE. *See under* Organisation.

CONTINUATION CLASSES. *See under* Previous Education.

CO-OPERATION, AGRICULTURAL.

Co-operative societies are apt to get into the hands of managers who require to be well paid (*Tinniswood*) 7120-1.

Cumberland, co-operative societies and creameries in (*Smith-Hill*) 7501-4; (*Tinniswood*) 7120, 7122-4, 7168-71.

Effect of, on demand for and appreciation of agricultural education (*Brockholes*) 13814-7; (*Carrick*) 504-6; (*Gilchrist*) 607-10.

If small holdings are to succeed, something must be done to educate holders in co-operative methods (*McCracken*) 9278-9.

Importance of (*Bradley*) 8811-6.

Influence of education on co-operation (*Davies*) 8282; (*Tinniswood*) 7121.

Question as to whether the State should subsidise

co-operation (*Dugdale*) 4991-4; (*Winter*) 6815-20. Should be taught in every grade of school, especially in those for women (*Bradley*) 8769-72, 8782.

South Wales, co-operation in (*Davies*) 8280-2, 8315-7, 8391.

Success of the small holdings movement depends on (*W. P. Wright*) 10268-70.

Suggests that county education officials should be enabled to assist in developing co-operation (*Druce*) 3579-92.

Suggests that in connection with elementary school gardens, the principles of co-operation might be taught (*Bradley*) 8769-72.

Women are not in favour of (*Bradley*) 8769.

COPE, Mr. THOS. Chairman of the Leicestershire Education Committee and of the Governing Body of the Midland Agricultural and Dairy Institute, Kingston.

Evidence, 1640-1661.

COUNTESS OF WARWICK'S SECONDARY AND AGRICULTURAL SCHOOL, Dunmow, Essex.

See "Bigod's Hall."

COUNTY COUNCILS' ASSOCIATION.

Evidence received from (*Turnor*) 14221-14485; (*Hobhouse*) 14839-15041, representing the Association.

The Association are not satisfied with the agricultural education work of the County Councils (*Turnor*) 14355-9, but *see also* (*Hobhouse*) 15039-41.

COUNTY COUNCILS, WORK OF THE.

For information as to the work of any particular county *see under that county*; as to County Council Finance, generally, *see under Expenditure*; and as to organisation, generally, *see Organisation*.

COWAN, Mr. D. T. Director of Education for the Hants County Council.

Evidence, 5085-5293.

COWAN, Mr. T. W., F.L.S. Chairman of the British Bee-Keepers' Association. (Qualifications of witness, *see* 14680, 14718, 14724-5, 14800-2.)

Evidence, 14723-14838.

CRAIGIE, Major P. G., C.B. Recently Assistant-Secretary to the Board of Agriculture and Fisheries.

Evidence, 13175-13259.

CROOKE, Miss M. *Principal of the School of Gardening, Bredons Norton, near Tewkesbury.*
Evidence, 4691-4867.

CUMBERLAND. *See under* Newton Rigg, Cumberland and Westmorland Farm School.

DAIRYING. *See under* Subjects of Instruction.

DAUNTSEY AGRICULTURAL SCHOOL, WEST LAVINGTON.

Evidence received principally from (Solomon) 11415-11553.

Boards of Agriculture and Education, connection with (Solomon) 11421, 11423-31, 11434-7, 11450, 11456, 11524.

Capable of doing very valuable work (*Brooke-Hunt*) 15664.

Changed from its original purpose so as to obtain grant from Board of Education (*Phipps*) 9084-6a, 9119-24, 9186-7.

Doing excellent work (*Gilchrist*) 545, 730.

Great assistance to agriculture and admirable school in every way (*Phipps*) 9084-6a, 9086c.

Object of the school (Solomon) 11420, 11550-1.

Ought to have a great future before it (*Fitzmaurice*) 7853.

Position school might occupy if neighbouring counties co-operated as regards agricultural education (Solomon) 11526-39, 11544-5, 11549-51.

Attitude of Agriculturists towards, *see that title.*

Courses of Instruction (Solomon) 11420-2, 11432-3, 11438-41, 11456-64, 11467-8, 11486-505, 11512-30, 11550.

Finance :

Assistance received from Wiltshire County Council (*Fitzmaurice*) 7840a.

Financial position (Solomon) 11417-9, 11506-11.

Would prefer that grants to the school should come from Board of Agriculture (*Phipps*) 9086b, 9118, 9195-9.

Students :

Type of student and their after-careers (*Gilchrist*) 730; (Solomon) 11422, 11442-6, 11471-3, 11550-1.

DAVIES, Mr. H. JONES. *Formerly Chairman of the Carmarthenshire County Council.* (Qualifications of witness, *see* 8249-53, 8272-5.)

Evidence, 8249-8404.

DENMARK. *See under* Colonial and Foreign Countries.

DEVON.

Agricultural Committee, functions of (*Acland*) 2675, 2712.

Attitude of County Council and of farmers in the county to expenditure on agricultural instruction (*Acland*) 2686-7, 2717-40.

Dairy school (*Acland*) 2897.

Lectures (*Acland*) 2640-2, 2756-61.

Scholarships were offered twenty years ago, but were not well taken up and were abandoned (*Acland*) 2643.

DORSET.

Evidence received principally from (Stiby) 12512-12781.

Attitude of County Council towards agricultural education (Stiby) 12514-20, 12566-70, 12640.

Question of co-operating with other counties for the purposes of higher agricultural education (Stiby) 12761-81.

Reading University College, reason for discontinuing grant to (Stiby) 12571-5, 12741-51.

Would like to see an agricultural side to four secondary schools in the county (Stiby) 12535-52, 12720-12731.

Beaminster Grammar School, agricultural side to (Stiby) 12532-6, 12641-2, 12731.

Cost of Instruction (Stiby) 12732-7, 12752-6.

Dairying (Stiby) 12565, 12670-81, 12688-9.

Suggests alteration in method of giving instruction (Stiby) 12602-6, 12682-9.

Dorset—*cont.*

Experiments (Stiby) 12662-3.

Horticultural Instruction (Stiby) 12616-27, 12734.

Manual Processes (Stiby) 12628-38, 12698-716.

Suggests that no instruction should be given (Stiby) 12633-8.

School Gardens (Stiby) 12738-40.

Short Agricultural Courses (Stiby) 12557-64, 12658-61.

DRAWING. *See under* Subjects of Instruction.

DREWITT, Mr. C. J. *Member of the West Sussex County Council.* (Qualifications of witness, *see* 12019.)

Evidence, 12014-12173.

DRUCE, Mr. EDRIC, F.C.S. *Principal of the Ridgmont Agricultural Institute, Bedfordshire.*

Evidence, 3494-3810.

DUGDALE, Mr. J. MARSHALL. *Nominated by the Royal Agricultural Society of England.*

Evidence, 4868-5033.

DUNMOW, AGRICULTURAL AND TECHNICAL SCHOOL AT. *See* "Bigods Hall."

DUNN, Mr. WM. H. *Chairman of the Berkshire County Council.* (Qualifications of witness, *see* 11916.)

Evidence, 11915-12013

DUNSTAN, Mr. M. J. R., M.A., F.R.S.E., F.I.C. *Principal of the South Eastern Agricultural College, Wye.* (Qualifications of witness, *see* 865-7.)

Evidence, 751-881, 1834-1971.

EADY, Mr. C. H. *Farm Steward and Assistant Agent to Lady Wantage, at Lockinge.* (Qualifications of witness and information as to the Wantage Estate, *see* 9354-6, 9393-400, 9402-4, 9454-8, 9476-84.)

Evidence, 9354-9484.

EAST SUSSEX COUNTY COUNCIL. *See* Uckfield Agricultural and Horticultural College.

EASTERN COUNTIES DAIRY INSTITUTE, IPSWICH.

Evidence received principally from (J. A. Smith) 14486-14582.

Attitude of Agriculturists towards, *see that title.*

Courses of instruction (J. A. Smith) 14502, 14510-1, 14520-7, 14575-82.

Are too short (J. A. Smith) 14510-1, 14535, 14538-42.

Farm (J. A. Smith) 14493, 14550-2.

Financial position (J. A. Smith) 14492, 14496-9, 14503-4, 14546-7.

Governing body (J. A. Smith) 14486-8.

No provision in the Eastern Counties previous to the establishment of (J. A. Smith) 14545.

Scholarships tenable at (J. A. Smith) 14492, 14502a-c, 14511.

Staff (J. A. Smith) 14508-9.

Students :

Fees (J. A. Smith) 14519.

Number of (J. A. Smith) 14493, 14548-9.

Residential accommodation for (J. A. Smith) 14515-7.

Type of student and their after-careers (J. A. Smith) 14502a, 14511b-4, 14517-8, 14528, 14567-9.

EFFECT AND VALUE OF AGRICULTURAL EDUCATION.

For information as to the effect produced by instruction in any particular subject, refer to Subjects of Instruction (e.g., under Dairying).

Advance which agricultural education has made in past 17 years (*Eve*) 13036-42.

Advantage for a lad to go to college for about a year (*Eady*) 9405-7.

Effect and Value of Agricultural Education—cont.

- College course will not do much good to a boy of sixteen who is going to carry out the business of a farmer (*Stiby*) 12576.
- College education gives a practical farmer a great advantage over those who have had no such education (*McCracken*) 9242-4.
- College training is necessary to every farmer who is going to farm on a large scale (*McCracken*) 9353.
- Education has made farmers a different class of men to what they were fifty years ago (*Tinniswood*) 7121a, 7172-3.
- Good work is being done by the agricultural colleges (*Langridge*) 10916-22, 10934-8, 10941-3.
- Importance of education in agriculture (*Cockburn*) 10567-8.
- Influence of a short course on the subsequent farming of students (*Davies*) 8335-9.
- Instructor can teach in a few minutes what to acquire by experience would take a long time (*Eady*) 9365-7.
- Land is producing more as result of education (*Davies*) 8322.
- Long course at college unfits lad for farm life (*Eve*) 13076-80, 13084, 13111-8.
- More instruction a farmer has the better (*Peter*) 9792-3.
- Practical results obtained have been remarkably advantageous to the working farmer (*MacDonald*) 11786.
- Scientific instruction enables farmer to obtain larger yield (*Tinniswood*) 7187-91.
- Students have derived more benefit from six months at a farm school than from two years at elementary school (*W. T. Lawrence*) 7254d; (*Tinniswood*) 7159, 7198-201.
- Students should not be too long away from the practical side of farming: two winters is a sufficiently long period for them to be at college (*Peet*) 12399-12402.
- Successful agriculturist must of necessity be thoroughly conversant with science as applied to agriculture (*Grant*) 10429-30.
- Surprising what a vast amount of information acquired by short-course student (*Roberts*) 8113f.
- To gauge the extent of the benefit derived from the instruction given during last 10 or 15 years is, at present, impossible (*Simmons*) 8606.
- Too many students after course at college take up agricultural appointments rather than practical farming (*Hall*) 1542-3.
- Work of the County Councils has on the whole been of an excellent character (*Brooke-Hunt*) 15592.
- Refer also to Attitude of Agriculturists and the work of particular institutions and counties.*

EGERTON, EARL, OF TATTON. *See* (*Young*) 1433-4.

ELEMENTARY EDUCATION. *See under* Previous Education.

ELEMENTARY SCHOOL TEACHERS.**Instruction or Training in Rural Subjects:**

- Approves of such instruction (*Acland*) 2838-45.
- Benefit derived by urban teachers from attending classes in nature study (*Hopkinson*) 8932-3; (*Weiss*) 8941a, 8958-9.
- Board of Education, *see that title*.
- Demand for women teachers who have taken a course in nature study (*Wilkinson*) 11583-5.
- Difficulty in providing supplementary training for teachers engaged in rural areas (*Ogilvie*) 15690p-q, 15691-5a.
- Difficult to get teachers interested in rural subjects (*Bradley*) 8765-6.
- Effect of such instruction (*Amos*) 905-6, 939, 949-50; (*Blackshaw*) 1768-9, 1774; (*Davies*) 8269-70; (*Fisher*) 3040-2; (*Hall*) 1514, 1548-1556; (*Nicholas*) 1038-42; (*Raby*) 1155-9; (*Winter*) 6790-1.
- Greatest need of the present day is an opportunity for affording facilities for acquiring such training (*Sutton*) 4018e.
- Methods by which Board of Education endeavour to supply such training (*Ogilvie*) 15695b, 15707, 16055.
- More encouragement should be given to pupil teachers to obtain such training (*Hobhouse*) 14911-23.

Elementary School Teachers—cont.**Instruction or Training in Rural Subjects—cont.**

- Most necessary that teachers should be trained so as to take an interest in rural subjects (*Langridge*) 10926-33.
- Need for such training (*Hall*) 1514; (*Tinniswood*) 7158; (*Turner*) 7828-30; (*Turnor*) 14330-1, 14380-2, 14433-4, 14479, 14482-5.
- Not possible to earmark any large proportion of future teachers for work in rural areas (*Ogilvie*) 15690p.
- Only since the passing of the Education Act of 1902 that it has been possible for the Board of Education to face the question of providing such training (*Ogilvie*) 15690q.
- Ordinary college staff should not be expected to give vacation courses for (*Dugdale*) 4978-80.
- Question of differentiating between the training of future urban and rural teachers (*Brockholes*) 13722-5; (*Keeble*) 4255-62; (*Roberts*) 8245-8; (*Sutton*) 4020, 4031; (*Turner*) 7831-2, 7945-7, 8017-21.
- Summer vacation courses needed as well as Saturday classes (*Hall*) 1595-6.
- Teachers are anxious to obtain such instruction (*Amos*) 905, 949; (*Dugdale*) 4880.
- Training in rural subjects should be an integral part of the work of all agricultural colleges and pupil-teacher training centres (*Acland*) 2654-6.
- Would like to see it made compulsory for every pupil teacher at a secondary school to receive instruction in botany and the principles of gardening (*Howard*) 7001, 7050-4.
- Provision for such Training at the following colleges and in the following counties:**
- Aberystwyth, University College of Wales (*Davies*) 8269-70; (*Roberts*) 8219-22.
- Armstrong College (*Carrick*) 431-2.
- Bangor, University College of North Wales (*Winter*) 6653i, 6659f, 6789-93.
- Reasons for abandoning such classes (*Winter*) 6659g, 6682-5.
- Basing, Hampshire Farm School (*D. T. Cowan*) 5266-8.
- Cambridge, University of (*Sapwell*) 263-5; (*Wood*) 155-159.
- Cheshire (*Ward*) 4606-13, 4622-3.
- Essex County Technical Laboratories (*Nicholas*) 953.
- Harper-Adams Agricultural College (*Burne*) 5673-6.
- Harris Institute (*Porter*) 13629-34.
- Hereford (*Peet*), 12353-5.
- Holmes Chapel College of Agriculture and Horticulture (*Young*) 1284-5, 1354-7.
- Leeds, University of (*Seton*) 3060-7.
- Manchester University (*Hopkinson*) 8929-33; (*Weiss*) 8941a, 8955-9.
- Midland Agricultural Dairy College (*Blackshaw*) 1768-72.
- Newton Rigg, Cumberland and Westmorland Farm School (*Howard*) 7105-6; (*Tinniswood*) 7158.
- Reading University College (*Percival*) 4348-50; (*Sutton*) 4018e-20.
- For acting teachers (*Childs*) 3992-7; (*Keeble*) 4254.
- Thorough course to enable a student to become a competent teacher in a village school could be given at (*Childs*) 3948, 3954a, 3998-4003.
- Ridgmont Agricultural Institute (*Druce*) 3749-3756.
- South-Eastern Agricultural College (*Amos*) 937-938, 949; (*Dunstan*) 806-9, 822, 1909-14; (*Hall*) 1515; (*Langridge*) 11005-8.
- Swanley Horticultural College (*Wilkinson*) 11582, 11586-90.
- Uckfield Agricultural and Horticultural College (*Langridge*) 11008-11; (*Mannington*) 2096-9; (*Woodhead*) 2189.
- Wiltshire (*Phipps*) 9061-5.

ESSEX COUNTY TECHNICAL LABORATORIES, CHELMSFORD.

- Evidence received principally from* (*Nicholas*) 951-1066, 1188-1238; (*Goodchild*) 1067-1095; (*Raby*) 1096-1159; (*Steel*) 1160-1187.
- Board of Agriculture and Fisheries, relations with (*Nicholas*) 955a, 1219-22.

Essex County Technical Laboratories, Chelmsford—cont.

- Cambridge University, relations with (*Goodchild*) 1067*b*, *k*; (*Nicholas*) 987, 1059–60.
 Distribution of reports, &c. (*Raby*) 1150–4.
 Governing body (*Goodchild*) 1067*a*, 1090–1; (*Nicholas*) 971–77, 1008–13, 1211–3; (*Raby*) 1097–107.
 History of the foundation of (*Nicholas*) 952.
 Labourers, instruction for (*Goodchild*) 1067*g*; (*Nicholas*) 953*g*, 954; (*Raby*) 1116–49.
 Effect of (*Goodchild*) 1067*h*, 1069.
 Visits paid by committees of farmers to Scotland, Holland, &c. (*Goodchild*) 1095; (*Nicholas*) 953*f*, 1014–24.
 Effect of (*Goodchild*) 1067*e*; (*Nicholas*) 1020–2.
Analyses (*Nicholas*) 953*c*, 995, 1200–7, 1233–9; (*Steel*) 1161–71, 1184–7.

Attitude of Agriculturists towards, *see that title*.

Courses of Instruction (*Goodchild*) 1067*c*; (*Nicholas*) 952*a*, 953, 953*g*, 954, 967–70, 986–7, 1025–30; (*Raby*) 1096*a*.

Elementary school teachers, *see that title*.

External Work :

- Experiments (*Goodchild*) 1067*d*; (*Nicholas*) 953*e*, 954–5, 962.
 Gardeners' meetings (*Nicholas*) 963, 1031, 1208–10.
 Lectures (*Goodchild*) 1067*f*, 1083–5, 1090; (*Nicholas*) 960–1; (*Raby*) 1101.
 Market-day lectures (*Nicholas*) 953*b*, 1034–6, 1044.
 Migratory dairy instruction discontinued (*Goodchild*) 1067*c*, 1072, 1076–7; (*Nicholas*) 992.

Finance :

- Financial position (*Nicholas*) 953*a*, 956–9, 978–85, 996–1013.
 Grants from national funds inadequate (*Nicholas*) 955*b*, 1067*j*.
 Sources of income (*Nicholas*) 955*c*, 959.

Scholarships awarded tenable at higher institutions (*Nicholas*) 964–6.

Staff :

- Difficult to retain services of (*Nicholas*) 1190–4.

Students :

- Fees charged to students coming from outside the county (*Nicholas*), 1032–3, 1063–5.
 Instruction given to only a small proportion of the young farmers of the county (*Nicholas*) 1045–9.
 Number of (*Nicholas*) 932*b*, 1037.
 Type of student and their after-careers (*Nicholas*) 988, 990–1, 952*b*.

EVE, Mr. H. TRUSTRAM. *Secretary to, and nominated to give evidence by, the Farmers' Club.* (Qualifications of witness, *see* 12951–9, 12969–72, 12996, 13031.)

Evidence, 12951–13174.

EXAMINATIONS.

Board of Education Examination. *See* Board of Education.

Greater consideration should be given to class records (*MacDonald*) 11800–1, 11883–4.

Many of the present-day examinations cause the curriculum at agricultural colleges to be overcrowded (*Swanwick*) 7637–9, 7752–7.

Should follow the teaching (*Hall*) 1509–11, 1604–5, 1632–6.

Suggestion for establishing a National Diploma in Poultry-keeping (*Brown*) 6171*g*.

Value of an outside examiner :

- An outside examiner should always be associated with a teacher (*Hall*) 1566, 1628–30.
 Comment upon this (*Eve*) 13095.
 Approve of outside examiners associated with the teacher (*Smith-Hill*) 7560–1.
 Outside examiner makes diploma of more value (*Foulkes*) 5817–8.

National Diploma Examinations :

Evidence received from (*Dugdale*) 4868–5033, *representing the Royal Agricultural Society of England, and* (*MacDonald*) 11758–12013, *as regards the Highland and Agricultural Society of Scotland.*

Change likely to be needed (*Macdonald*) 11776.
 Not necessary for the colleges to be represented on the National Diploma Board (*Dugdale*) 5004–5008, 5023–4.

Object of the establishment of (*Dugdale*) 4917–8, 4920; (*Macdonald*) 11762–74.

Examinations—cont.**National Diploma Examinations—cont.**

Question of the control of the, being undertaken by the Board of Agriculture (*Dugdale*) 4921, 4930–4; (*MacDonald*) 11823.

Successful candidates have no difficulty in finding situations (*Dugdale*) 4919.

Time is coming when the central examinations might be superseded by other means (*MacDonald*) 11776–9, 11800*a*, 11823–7, 11830, 11865–7, 11881.

Agriculture :

Comparison between the old Senior examination of the R.A.S.E. and the N.D.A. (*Smith-Hill*) 7549–51.

Examiners discuss informally the doubtful candidates and examine candidates *visu voce* a few hours after reading his papers (*Eve*) 13031, 13124–31.

Excellent examination (*Voelcker*) 13994–8.

Excellent examination: much more appreciated by those who are to become teachers and lecturers than by those who are to be practical farmers (*Smith-Hill*) 7486–90.

Exists as a test of the teaching of the colleges, and as such considers it necessary (*Voelcker*) 13998, 14001–5.

History of the establishment of, number of candidates, fees, &c. (*Dugdale*) 4869, 4871*b*, 4872–7, 4879; (*Eve*) 13032–4.

Most decidedly of opinion that examination should be continued (*Eve*) 13035.

No longer necessary (*Hall*) 1560–73.

Not sufficiently practical (*Foulkes*) 5691; (*Hall*) 1565–8; (*Sapwell*) 242; (*Woodhead*) 2222–6.

Comment upon (*Eve*) 13031*a*.

Out of sympathy with the syllabus and method of conducting the examination (*Dunstan*) 1903–4.

Should be re-modelled and brought more in accordance with the views of existing educationalists (*Dunstan*) 1905–6, 1954–71; (*Hall*) 1565–73.

Thoroughly good examination (*Eve*) 13031.

Would be an improvement if part of the examination were held actually on a farm (*Dugdale*) 4921; (*Eve*) 13048–13049; (*McCracken*) 9263; (*Roberts*) 8147; (*Swanwick*) 7688–90.

Comment upon this suggestion (*Voelcker*) 13999–4000.

Would be an improvement to hold examination at various centres (*Roberts*) 8147–8.

Comment upon this (*Dugdale*) 4922, 5025–6; (*Eve*) 13045–7; (*McCracken*) 9263–5.

Dairying:

Feels that this examination has done its work completely (*MacDonald*) 11828–30, 11878–11880.

History of the establishment of, number of candidates, &c. (*Dugdale*) 4869, 4871*a*, 4877–8.

Opinion as to it being a practical examination (*Ashcroft*) 2411–6.

Question of an advantage being felt by student being examined where he is trained (*Ashcroft*) 2417–9; (*Druce*) 3649–54.

EXPENDITURE UPON AGRICULTURAL EDUCATION.

Agriculturists are not themselves in a position to support to any great extent agricultural education (*Ashcroft*) 2407–9; (*Bickersteth*) 2985–6; (*Childs*) 3910–1; (*MacDonald*) 11789–91.

Any further national grants for agricultural instruction should be administered under the central authority (*Hobhouse*) 15036–8.

Assistance given by the State should be increased (*Turnor*) 14258, 14327, 14376–7.

Board of Education, method of giving grants (*Howard*) 7007–9.

England compares unfavourably with Scotland (*Eve*) 13169–70; *see also* (*Ogilvie*) 16006–14.

Total amount spent on agricultural education is too small (*Hobhouse*) 14996, 15006.

Would justify expenditure upon agricultural education, because agriculturists contribute so largely to the rates (*Chris. Middleton*) 12863.

Expenditure upon Agricultural Education—*cont.***Board of Agriculture :**

Amount from national sources should be increased (*Chris. Middleton*) 12837-44, 12074-7, 12882; (*Lodge*) 5504.

Claim for further national funds is a very strong one (*MacDonald*) 11790.

Earlier grants were given mainly for dairying (*Brooke-Hunt*) 15558.

Education coming under, should not be at a disadvantage as compared with education given by Board of Education (*Phipps*) 9086b.

If more money were given it would be a very good thing for the future of farming in this country (*McCracken*) 9270-4.

Method of allocating grants from (*Bickersteth*) 3101-17; (*Brooke-Hunt*) 15667, 15676-81; (*Carrick*) 350-2, 410-26; (*Childs*) 3906-8, 3038-40; (*Dunstan*) 868-72, 1836-7, 1897-9, 1925-32; (*Inskip*) 3325a, 3326, 3393-5; (*Phipps*) 9077-81; (*Winter*) 6661c; (*Wood*) 43-4; (*W. P. Wright*) 10197-200.

Present sum at the disposal of, is inadequate (*W. P. Wright*) 10194-6.

Should like to see considerable addition to funds at disposal of (*Craigie*) 13187, 13227a.

Supported at one time lectures and the more local work, but have since concentrated their grants more upon permanent centres (*Brooke-Hunt*) 15520, 15522, 15527, 15562-70.

Would prefer, if it were possible, to confine all money going to agricultural education through the Board of Agriculture (*Craigie*) 13229.

Grants from, to agricultural institutions.

For information as to the grant given to any particular institution, see under that institution.

Have remained stationary, in spite of increase of work and expenditure (*Childs*) 3852c, 3852f.

Inadequate (*Benson*) 2580-3; (*Winter*) 6732.

Maximum grant has been fixed by the Board of Agriculture for the highest type of institution, no matter how great the work and expenditure may be (*Brooke-Hunt*) 15667-75.

No hard-and-fast conditions are attached to (*Brooke-Hunt*) 15444-57.

Should be increased and extended to lower grade schools (*Langridge*) 10922-3.

System of giving grants to agricultural colleges has never been seriously attacked (*Craigie*) 13227-8.

Would prefer to see State grants go to the larger institutions, and not considerable sums of money given to purely local institutions (*Craigie*) 13183, 13193-4.

Support given by, to County Councils, and financial relations between Board of Agriculture and County Councils :

Great opportunity lost when the "whisky money" was given over entirely to the County Councils (*Hobhouse*) 14937, 14973-5.

Increased support from national funds would not tend to lower grants from County Council (*Pennant*) 6522-3, 6568.

Little doubt that if the Board offered to assist, the County Councils would be willing to spend more money on agricultural education (*Brooke-Hunt*) 15635-7, 15678-87.

Much more weight given to advice from a Government Department if accompanied by promise of funds (*Hobhouse*) 14974-5, 14995, 15021-5.

No grant from Board given for county work unless it is carried on through a permanent institution (*Brooke-Hunt*) 15578.

Should assist any County Council willing to spend money on agricultural education, and have a voice in the control (*Eve*) 12998-13000, 13083, 13119-22.

Should assist county work (*Fitzmaurice*) 7847; (*Swanwick*) 7662-5.

Should have some power of control over a portion of the "whisky money" (*Campbell*) 11194-6; (*T. W. Cowan*) 14830-3; (*Druce*) 3535-57, 3621-4, 3627-36, 3662-71, 3789-99; (*Hall*) 1491-7, 1580-87; (*Chris. Middleton*) 12877-81.

To elicit local support a grant from national funds is required (*Household*) 8052-5.

Expenditure upon Agricultural Education—*cont.***County Councils :**

Cannot allocate money to the giving of prizes unless instruction has been given (*Simmons*) 8662-6.

Considerable strain on the resources of (*Lodge*) 5485-8.

Cost of elementary education makes it difficult to raise a rate for higher education (*Mannington*) 2039-51.

Do not like spending money unless there is prospect of some near result (*J. W. Smith*) 12284-7.

Effect of a rate on an agricultural county (*Bickersteth*) 2935-7, 2984.

Effect that the Education Act of 1902 has had on the power of County Councils to devote money for agricultural education (*Bickersteth*) 2934b, 3288-96; (*Blackshaw*) 1778; (*Brooke-Hunt*) 15578; (*Childs*) 3852f; (*Cope*) 1643c; (*Davies*) 8294-8; (*Dunn*) 11920-4, 11926-31, 11954; (*Druce*) 3544-53; (*Eve*) 12997, 13082; (*Goaring*) 11119-24; (*Inskip*) 3401, 3446-53; (*Mannington*) 1991-3, 2047-51; (*Roberts*) 8153-4; (*Swanwick*) 7659-62.

Farmers are not so loud in their demand for agricultural education as other classes are for technical education (*Inskip*) 3401.

Farmers have a great dislike to high rates, and have sacrificed agricultural education to save the rates (*Eve*) 12997, 13081-3; refer also to (*Fitzmaurice*) 7847.

Funds at disposal of, are inadequate (*Morgan*) 5986.

Great disinclination to spend "whisky money" (*J. A. Smith*) 14502c.

Income of the local education authority is devoted to a single and complete end; this singleness of aim is best attained by a system which combines the interest of all concerned in the administration of the funds (*Ogilvie*) 15706c.

Money for all forms of higher education is scarce owing to the increased cost of elementary education (*Fitzmaurice*) 7840e, 7847, 7860-2.

No county can maintain every type of institution (*J. W. Smith*) 12278.

Rates should be relieved of the training of elementary school teachers (*Turnor*) 14330-1.

Sum available for agricultural education provided by the County Councils is sufficient (*Craigie*) 13188-92, 13194.

Too much money has been spent by the, on bee-keeping, horticulture and minor subjects, while the colleges have not been adequately supported (*Simmons*) 8616-21, 8657-63, 8682-5 8709-11.

Unless there is some "ear-marked" grant for agriculture, the work will not be extended (*Household*) 8052-5.

Unwilling to give grants towards the more extended courses (*Roberts*) 8111c, 8124-7.

Were provided with a source of income in the Residue Grant distinctly applicable to agricultural education (*Craigie*) 13178a.

Would like to see the "whisky money" more directly earmarked (*Craigie*) 13192a.

Institutions providing Agricultural Instruction :

Dairying education most expensive, and requires larger grants (*Blackshaw*) 1695-701, 1749.

Good results would accrue from, being better equipped with funds (*Beaven*) 14202.

Insecurity of support to, from County Council (*Winter*) 6661d.

Several do not use the financial year for their own purposes (*Brooke-Hunt*) 15550.

Those doing most for agriculture and dealing most with farmers' sons should be most encouraged (*Turnor*) 14278-90.

EXPERIMENTS OR DEMONSTRATIONS conducted by agricultural institutions or by county councils

For information as to experiments conducted by a college or county, see under the particular college or county.

Agricultural societies, whether, would carry on experiments (*Acland*) 2849-60, 2898-901, 2915 2917; (*Swanwick*) 7594.

Are of very great value (*Acland*) 2687; (*Chris. Middleton*) 12814-6.

Experiments or Demonstrations—cont.

- Board of Agriculture should inspect experimental plots and assist local authorities to conduct them on scientific lines (*Hobhouse*) 14942-4.
- Comparative value of soil analyses and experiments as a means of determining manurial requirements of soils (*Percival*) 4304-6.
- Experimental farm, or farm used for instruction cannot be carried on at a profit (*Lawrence*) 7434.
- Experimental work should be supported by national funds (*J. W. Smith*) 12201-6, 12234-47, 12284.
- Extent to which experiments have been carried out in the North of England (*Lawrence*) 7388-92.
- Good deal of money has been wasted on experimental plots (*Hobhouse*) 14942-4.
- Impossible for central institution properly to carry on experiments in the counties (*Percival*) 4107b.
- Some of the experiments conducted by agricultural colleges in this country are not reliable (*Collinge*) 5064-7.

Demonstrations for farmers :

- As regards, this country is ahead of continental countries (*Campbell*) 11226-8.
- Farmers often do not know the result of an experiment conducted on neighbour's farm (*Turnor*) 14301-4, 14405-6.
- For the use of practical farmers, results should be published in a concise and simple manner (*Turnor*) 14305-9.
- Importance of (*Simmons*) 8730-1 ; (*Swanwick*) 7587-9.
- More interest taken by farmers in, than any other form of instruction (*Inskip*) 3341-2 ; (*Seton*) 3074a.
- Most successful farmers take advantage of (*Tinniswood*) 7119a.
- Necessary to keep demonstrating year after year (*Winter*) 6879a.
- Often on too limited a scale (*Kidner*) 6031-8.
- Should not be stationary (*Acland*) 2670, 2868-70, 2921-2 ; (*Percival*) 4169.
- Suggests the establishment of "profit-and-loss" demonstration farms, conducted on commercial lines (*Turnor*) 14302, 14306, 14310-24, 14338-41, 14360-71, 14401-4, 14407-13, 14418-14429.
- Useful means of coming in touch with farmers (*Dunstan*) 879-80.
- Value of (*Eve*) 13028 ; (*Simmons*) 8672-3.

Need for increase of experiments and experimental work :

- Farmers will seldom go to see experiments carried on outside their own county (*Sapwell*) 279-81.
- In every county there should be a complete system of temporary plots for the purpose of testing soils, and one or more permanent manurial stations (*Brooke-Hunt*) 15611-3, 15616-7.
- More demonstration plots needed (*Craigie*) 13217.
- So as to repeat experiments carried out on college farms (*Amos*) 929-30, 934-6 ; (*Fisher*) 3014-5.
- Would like to see demonstration farms greatly increased so as, by means of trying same experiment for two or three years on a great number of plots, to determine definitely certain problems (*Percival*) 4107a, 4111, 4169, 4294-6.

Co-ordination of Experiments :

- Need for further organisation as regards experiments, and especially as to the correlation of results: the question as to whether this could be done by a special committee (*Beaven*) 14156-14158, 14173-6 ; (*Brockholes*) 13714-6 ; (*Brooke-Hunt*) 15611-3, 15618-9 ; (*Brown*) 6185-8 ; (*Campbell*) 11184a, 11214-8 ; (*Dugdale*) 4894-8, 4935-43, 5009 ; (*Dunstan*) 1907-8, 1941-6 ; (*Eve*) 13609-14 ; (*Gilchrist*) 748-9 ; (*Kidner*) 6033-5 ; (*McClellan*) 10039-46 ; (*MacDonald*) 11782-3 ; (*Chris. Middleton*) 12817-20 ; (*Percival*) 4167-70, 4212-4 ; (*J. W. Smith*) 12205-6 ; (*Turnor*) 14439 ; (*Wheeler*) 6411-3, 6442, 6444, 6466-71 ; (*Winter*) 6669.

Experiments or Demonstrations—cont.**Manurial schemes prepared by the Agricultural Education Association and published by the Board of Agriculture :**

- Board of Agriculture should decide what portion should be carried out (*Percival*) 4298-303, 4367-74.
- Experiments have been co-ordinated and improved as result of (*T. H. Middleton*) 15460d.
- Have not been adopted to the extent anticipated (*Foulkes*) 5871-3.
- Have not been altogether successful in co-ordinating experiments (*Dunstan*) 1942, 1947-1952.

EXTENT OF THE PROVISION OF AGRICULTURAL EDUCATION. See under Organisation.

FAITHFULL, Miss. *Warden of the Studley Horticultural College, Warwickshire.*
Evidence, 5294-5410.

FARM HYGIENE. *See under Subjects of Instruction—Veterinary Hygiene.*

FARM INSTITUTES. *See under Institutions.*

FARMERS' CLUB (*Eve*) 12960-8, 12973-4, 13036-42.

FARMING, KNOWLEDGE OF PRACTICAL.

For information as to the amount of practical work done by students at any institution, see under the particular institution, Courses of instruction ; and as to the knowledge of practical farming possessed by students, see the particular institution, Students, type of.

Farmers do not approve of specialised instruction off the farm (*Acland*) 2702-6.

Farmers send their sons to agricultural college to be taught the various sciences, not so much practical farm work (*Amos*) 886-9, 919.

Farming can only be learnt on the land (*Simmons*) 8595-6.

Number of farm operations suitable for boys are limited (*Solomon*) 11465-6.

Too much practical work at a college is liable to prevent students from studying (*McCracken*) 9300.

System of Apprenticing Lads to Farmers or Land Agents :

After-careers of farm pupils (*J. W. Smith*) 12251-12254.

Future farmer should have two or three years with good practical farmer and then attend a course at a school like the Farm School at Basing (*Simmons*) 8678.

Is satisfactory in Scotland (*MacDonald*) 11913-4.

Pupilage with land agent should always be supplemented by full college course (*McCracken*) 9343-9.

Value of (*Goaring*) 11092-4.

Refer also to Scholarships.

Whether an Agricultural Student should obtain his Knowledge of Practical Farming before or after his College Course :

Depends entirely upon the individual (*Foulkes*) 5766-7 ; (*Hall*) 1637-9.

Desirable that agricultural student should have a knowledge of practical farming (*Hale*) 13278-13280 ; (*Kidner*) 6014a ; (*McCracken*) 9286-9290 ; (*MacDonald*) 11804-8 ; (*Chris. Middleton*) 12802, 12866-7 ; (*Peet*) 12397-8 ; (*Seton*) 3049c, 3053 ; (*Simmons*) 8691-7 ; (*Smith-Hill*) 7563-6 ; (*Somerville*) 15115 ; (*Stiby*) 12607-12615 ; (*Tinniswood*) 7160 ; (*Turnor*) 14385-8.

Not always an alternative between taking practical agriculture before or after science, but is very largely an alternative between taking science before agriculture and not taking science at all (*Somerville*) 15115.

Would not approve of making it compulsory that every student should have a knowledge of practical agriculture (*Druce*) 3780-2.

FARRIERS, WORSHIPFUL COMPANY OF.

Evidence received from (*Sheather*) 10759-10892, representing the Company.

Doing good work which should be extended (*Sheather*) 10779-83.

Farriers, Worshipful Company of—cont.**Finance :**

Funds at disposal of, exceedingly small, but are all devoted to the objects of the Company (*Sheather*) 10789-91.
Sources of income (*Sheather*) 10766.
Work has been limited through want of funds (*Sheather*) 10764, 10768.

Registration Committee :

Appointment and constitution of (*Sheather*) 10763-4.
Circulars issued to public bodies (*Sheather*) 10775, 10853, 10869-83, 10887-91.
Examinations (*Sheather*) 10761-2, 10847-52.
Fees charged for registration (*Sheather*) 10766, 10829.
History of (*Sheather*) 10761-3.
Method of conducting (*Sheather*) 10837-42, 10853-60.
Work of (*Sheather*) 10769-73, 10778, 10808-16, 10821, 10846.

FARRIERY. *See under* Subjects of Instruction.

FISHER, Mr. R. *Member of the East Riding Education Committee.*

Evidence, 2999-3042.

FITZMAURICE, The Right Hon. Lord.

Evidence, 7840-7868.

FORESTRY. *See under* Subjects of Instruction.

FOULKES, Mr. P. HEDWORTH, B.Sc., F.E.S.
Principal of the Harper-Adams Agricultural College, Newport, Salop. (Qualifications of witness, see 5687, 5774.)

Evidence, 5686-5928.

FRANCE. *See under* Colonial and Foreign Countries.

GARFORTH FARM. *See under* Leeds University.

GEOLOGY. *See under* Subjects of Instruction.

GERMANY. *See under* Colonial and Foreign Countries.

GILCHRIST, Prof. D. A., M.Sc., F.R.S.E. *Professor of Agriculture and Rural Economy, Armstrong College, Newcastle-upon-Tyne. (Qualifications of witness, see 517-9.)*

Evidence, 517-750.

GLOUCESTERSHIRE.

Evidence received principally from (Swanwick) 7585-7771; (Turner) 7772-7839, 7869-8050; (Peter) 9755-9889.

Advice given to farmers (Turner) 7804-11.

Agricultural Committee (Swanwick) 7738-40.

Difficult county to work (Turner) 7918-9.

National Fruit and Cider Institute, relations with (Turner) 7816-20.

Probable lines of development (Turner) 7826, 7833-8, 7869-79, 7887, 7890-8, 7948-55, 7968-71, 7999-8000, 8005-8, 8026-31, 8037-41.

Royal Agricultural College, Cirencester, *see that title.*

Analyses (Turner) 7982-5.

Attitude of Agriculturists, *see that title.*

Classes for Farmers' Sons :**Berkeley :**

Aim of (Peter) 9759c, 9788-91.

Berkeley Hunt Agricultural Society (Peter) 9783, 9787, 9800-1, 9859-61.

Owing to the connection with the Society, the classes have been carried on under peculiarly favourable conditions (Swanwick) 7604b; (Turner) 7822-6, 7920.

Courses of instruction (Peter) 9759b, e, 9784, 9802-7, 9817, 9822-6; (Swanwick) 7604a, 7730; (Turner) 7788, 7792, 7958-61, 8042-5.

Have been carried on for eight years (Peter) 9759f; (Turner) 7965, 8046.

Staff (Peter) 9785-6; (Swanwick) 7606.

Gloucestershire—cont.**Classes for Farmers' Sons—cont.****Berkeley—cont.****Students :**

Difference in the attainments of (Peter)

9759d; (Turner) 7824, 7861-3.

Interest taken by (Peter) 9759d; (Turner) 7790-1.

Number of (Turner) 7789; (Peter) 9759g.

Type of (Peter) 9759f, 9808-9; (Turner) 7963-4, 7967.

Whether similar classes could be organised throughout the country (Peter) 9862, 9872-9.

Charfield (Turner) 7787-93, 7824, 7958-67.

Laverton (Turner) 7787-93, 7824, 7881-6, 7921-7, 7958-67.

Dairying (Peter) 9757a, 9758-9a, 9827-36; (Turner) 7812-5, 7931-7, 7975-87, 7990, 7992-5.

Experiments (Swanwick) 7590-4, 7799-800, 7954-7, 8022-3.

Finance :

Need a grant from Board of Agriculture (Turner) 7903-7.

Present provision for agricultural education insufficient (Household) 8056; (Swanwick) 7656-65; (Turner) 7826-7, 7914-7, 7972-4, 8008-10.

Horticulture (Swanwick) 7597a-603, 7735-7; (Turner) 7778-85.

Lectures (Swanwick) 7586-7; (Turner) 7778-85.

Manual Processes (Swanwick) 7631-2, 7683.

Rural Science Class at Cirencester Grammar School (Swanwick) 7630; (Turner) 7794-8, 7960-1.

Scholarships (Peter) 9837-8; (Swanwick) 7670-5, 7740-1, 7760, 7763-7; (Turner) 7801-3, 7909-13, 8034-7.

Staff :

Inadequate (Turner) 7906.

GOARING, Mr. W. *Lecturer in Horticulture to the Education Committee of East Sussex County Council.*

Evidence, 11026-11134.

GOODCHILD, Mr. T. *Chairman of the Agricultural Sub-Committee of the Essex County Education Committee.*

Evidence, 1067-1095.

GRANT, Mr. W. J. *Director of Agricultural Education for the County of Monmouth.*

Evidence, 10287-10521.

HACKING, Mr. T. *Principal of the Countess of Warwick's School, Bigod's Hall, Dunmow, Essex.*

Evidence, 6907-6996.

HALE, Mr. WINDHAM E. *Vice-Chairman of the Agricultural Sub-Committee of the Lancashire County Council. (Qualifications of witness, 13260-1, 13263-4.)*

Evidence, 13260-13504.

HALL, Mr. A. D., M.A. *Director of the Rothamsted Experimental Station, Harpenden; and formerly Principal of the South Eastern Agricultural College, Wye.*

Evidence, 1479-1639.

HAMPSHIRE. *See under* Basing, Hampshire Farm School at.

HARPER-ADAMS AGRICULTURAL COLLEGE, NEWPORT, SALOP.

Evidence received principally from (Burne) 5542-5685; (Foulkes) 5686-5928.

Advice to neighbouring farmers (Foulkes) 5750-1, 5800-12.

Harper-Adams Agricultural College—cont.

Board of Agriculture, relations with (*Burne*) 5603-6.
Buildings (*Burne*) 5547, 5553.

Gas has not been installed owing to lack of funds (*Foulkes*) 5744-5.

Directions in which work could be developed (*Foulkes*) 5927-8.

Governing Body (*Burne*) 5588-602, 5607, 5682-4.

History of the foundation of the College, information as to the Will of Mr. Harper-Adams (*Burne*) 5544-8, 5555, 5563, 5573-82, 5599, 5614-5; (*Foulkes*) 5757-9, 5768-9, 5792, 5897-9.

Shropshire and Staffordshire gain materially by the Will (*Burne*) 5608-13.

Shropshire and Staffordshire:

Cost of experiments in Shropshire fall on the College (*Burne*) 5559.

County Councils for, are carrying on a certain amount of work not through the College (*Burne*) 5601; (*Foulkes*) 5920-3.

Lectures are given in the counties by College staff (*Burne*) 5560.

Relations with the counties of (*Burne*) 5585, 5599-602, 5661-2; (*Foulkes*) 5753.

Analyses and seed testing for farmers (*Foulkes*) 5739-43, 5746-9, 5840-5, 5852-4.

Attitude of Agriculturists towards, *see that title*.

Courses of Instruction (*Burne*) 5568, 5646-8; (*Foulkes*) 5688-90, 5709-12, 5719, 5723-4, 5783-4, 5830-3, 5860-70, 5890-3, 5912-3.

Elementary school teachers, *see that title*.

External Work (*Foulkes*) 5798-9.

Experiments (*Burne*) 5559, 5625-50; (*Foulkes*) 5725-6, 5730-3, 5847-51, 5871, 5924-6.

Lectures (*Burne*) 5560-2, 5626-37, 5677-9; (*Foulkes*) 5734-8, 5894.

Regret that staff have not been able to give more (*Foulkes*) 5775-6.

Farm (*Burne*) 5552; (*Foulkes*) 5720-3, 5778-80, 5796-7, 5839, 5910.

Finance:

Amount received under the Will of Mr. Harper-Adams (*Burne*) 5546-50, 5580-1, 5656-60, 5685.

Financial arrangements (*Burne*) 5683-5.

More money needed to extend the work (*Dugdale*) 4900-1; (*Foulkes*) 5748.

Receipts from supporting counties (*Burne*) 5549-50, 5585-6.

Work refused owing to lack of funds (*Burne*) 5569-72; (*Foulkes*) 5747.

Research Work (*Burne*) 5649.

Scholarships tenable at (*Burne*) 5550-1, 5564, 5641-4, 5680-1; (*Foulkes*) 5718, 5904-9.

Staff (*Burne*) 5567-8, 5629, 5635-7, 5639-40; (*Foulkes*) 5335-8, 5920-3.

Difficult to retain services of (*Foulkes*) 5773.

Inadequate (*Foulkes*) 5747-9, 5927-8.

Inadequately paid (*Foulkes*) 5927-8.

Salaries insufficient to retain services of (*Burne*) 5565-6, 5570.

Students:

Fees (*Burne*) 5563, 5619-21, 5672.

No old students' organisation (*Foulkes*) 5918-9.

Number of (*Foulkes*) 5698, 5834, 5878-9.

Previous education of, *see that title*.

Residential accommodation (*Burne*) 5554; (*Foulkes*) 5699-705.

Type of student and their after-careers (*Burne*) 5652-5; (*Foulkes*) 5688a, b, 5706-10, 5713, 5717, 5759-63, 5770, 5789-90, 5792, 5819-27, 5880-8, 5903-7.

HARRIS INSTITUTE. *See under* Lancashire.

HEREFORD.

Evidence received principally from (J. W. Smith) 12174-12307; (Peet) 12308-12511.

Agricultural Sub-Committee of the Education Committee (J. W. Smith) 12178, 12180-2.

Question of co-operating with other counties for the purposes of higher agricultural education (Peet) 12426-41, 12443-50, 12484-5.

Secondary schools, deficiency of (Peet) 12457-8, 12486-93.

Would welcome the establishment in the county of a farm school like the one at Basing (Peet) 12448, 12494-8.

Hereford—cont.

Advice and Assistance to farmers (Peet) 12327-8, 12324, 12386-8; (J. W. Smith) 12192-3, 12197.

Giving much information and the sort of information that farmers require (J. W. Smith) 12191.

Attitude of Agriculturists, *see that title*.

Dairying (Peet) 12341-5.

Elementary School Teachers, *see that title*.

Experiments (Peet) 12356-65, 12404-10, 12421-3.

Great need of experiments in the county, but not at the expense of the county (J. W. Smith) 12201-6, 12234-47.

Finance:

Cost of instruction (Peet) 12182, 12411-8.

Present work has been carried on only for about three years, and the Committee have power to spend more money than they actually are spending (J. W. Smith) 12186-90.

Receive no aid from Board of Agriculture (J. W. Smith) 12198-9.

Total cost of printing (Peet) 12337-40.

See also under Experiments above.

Horticulture (Peet) 12346-8, 12384-5.

Lectures (Peet) 12318-21, 12471-9.

Manual Processes (Peet) 12368-72, 12379-83.

Scholarships (J. W. Smith) 12277, 12295-7.

School Gardens (Peet) 12349-52, 12467-70.

Short Agricultural Course (Peet) 12315-7, 12321-3, 12326-31, 12334-6, 12389-94, 12451-6.

Students:

Number of (Peet) 12323.

Some, might benefit by subsequently attending more advanced courses (Peet) 12373-6.

Type of (Peet) 12324-5, 12332-3, 12395-8, 12402-3, 12419-20.

Staff (Peet) 12369-72; (J. W. Smith) 12183-5.

Veterinary Hygiene (Peet) 12366-7.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

Evidence received principally from (MacDonald) 11758-12013.

Assistance given by the Society and the attitude of its members towards agricultural education (Craigie) 13175a; (MacDonald) 11763-6, 11810-6, 11818a, 11820-1.

Memorial to H.M. Government (Craigie) 13176a.

National Diploma, *see under* Examinations.

HILL, Mr. G. W., of Cheshire.

Evidence, 1447-1478.

HOBHOUSE, The Rt. Hon. HENRY. *Chairman of the Education Committee of the Somerset County Council.*

Evidence, 14839-15041.

HOGBEN, Mr. G., M.A. *Inspector-General of Schools in New Zealand.*

Evidence, 14040-14128.

HOLLAND. *See under* Colonial and Foreign Countries.**HOLMES CHAPEL, CHESHIRE, College of Agriculture and Horticulture at.**

Evidence received principally from (Young) 1240-1446; (Hill) 1447-1478.

Advice given to farmers (Young) 1276-9.

Governing Body (Young) 1262-4, 1306-12.

History of the foundation (Ward) 4626-30.

Analyses (Young) 1277-9, 1455-60.

Attitude of Agriculturists towards, *see that title*.

Courses of Instruction (Young) 1246-7, 1253-4, 1299, 1300-1, 1304-5, 1321-2, 1330-5, 1341, 1363, 1381-5, 1396.

Elementary school teachers, *see that title*.

Proposal to start short-courses (Young) 1391, 1426-7.

Holmes Chapel, Cheshire, College of Agriculture and Horticulture at—*cont.*

External Work :

Experiments (*Young*) 1254a, 1255-7, 1271, 1333-8.

Need of further external experiments (*McCracken*) 9221-4.

Lectures (*Hill*) 1452-4, 1461-4, 1473-5; (*Ward*) 4584-92, 4639-57; (*Young*) 1272-5.

More, might be given (*McCracken*) 9218-20, 9224.

Farm (*Young*) 1249-53, 1266, 1369-72.

Finance :

Financial position (*Ward*) 4598-602; (*Young*) 1258-61, 1287-91.

Require larger grant (*Young*) 1287-91.

Sources of income (*Young*) 1259-61, 1269.

Scholarships tenable at (*Young*) 1259, 1366-8, 1392-4, 1421-2, 1435-7, 1443-5.

Staff (*Young*) 1248.

Are overworked (*Young*) 1257, 1272-3.

Students :

Fees (*Young*) 1325-7.

Higher, charged to students from outside the county (*Young*) 1270, 1326-7.

Number of (*Young*) 1242-5, 1342-5, 1373-80.

Previous education of, *see that title*.

Type of student and their after-careers (*Hill*) 1465-8; (*Ward*) 4631-3, 4636; (*Young*) 1243, 1280-3, 1294, 1302, 1313-20, 1323-4, 1359-62, 1364-5, 1401-3, 1446.

HONORARY AGRICULTURAL CORRESPONDENTS.

See under Board of Agriculture and Fisheries.

HOPKINSON, Mr. A., LL.D., K.C. *Vice-Chancellor of the University of Manchester.*

Evidence, 8855-8936.

HOPKINSON, Mrs. *Chairman of the Colonial Branch of the Horticultural College, Swanley.*

Evidence, 11677-11757.

HORTICULTURAL EDUCATION ASSOCIATION.

Evidence received from (W. P. Wright) 10113-10286; (Goaring) 11026-11134, *representing the Association.*

HORTICULTURE. *See under* Subjects of Instruction

HOUSEHOLD, Mr. H. W., M.A. *Secretary to the Gloucestershire Education Committee.*

Evidence, 8051-8099.

HOWARD, Mr. H. C. *Chairman of the Cumberland County Council.*

Evidence, 6997-7111.

HUMPHRIES, Mr. A. E. *President of the National Association of British and Irish Millers. (Qualifications of witness, see 13828-33, 13846, 13899a.)*

Evidence, 13828-13901.

HUNGARY. *See under* Colonial and Foreign Countries.

HUNT, Mr. A. E. BROOKE. *A Superintending Inspector of the Board of Agriculture and Fisheries and Secretary to the Committee. (Qualification of witness, see 15515-8, 15584.)*

Evidence, 15515-15690.

HUTTON FARM. *See under* Lancashire.

HYGIENE. *See under* Subjects of Instruction—Veterinary Hygiene.

INDIA. *See under* Colonial and Foreign Countries.

INNES BEQUEST (*Brooke-Hunt*) 15659b, 15660-2.

INSKIP, Mr. A. *Chairman of the Bedfordshire Agricultural Education Committee.*

Evidence, 3301-3493.

INSTITUTIONS PROVIDING INSTRUCTION IN AGRICULTURE—Institutions other than Elementary and Secondary Schools.

Advantage to have lecturers resident in the counties (*Percival*) 4153, 4181-2.

Agricultural college not required in West of England (*Acland*) 2646-9, 2828-9.

Cannot themselves gauge the good work they have done (*Dugdale*) 4891.

Dairy institutions, probably sufficient provision of, (*Brooke-Hunt*) 15620, 15659a.

Danger of overlapping between (*Winter*) 6878-9, 6889-91.

Farm, essential that agricultural institutions should have a, attached (*Eady*) 9357; (*McCracken*) 9301; (*T. H. Middleton*) 15459c; (*Simmons*) 8742.

Should be a large one (*Simmons*) 8741-2.

For college to be a real centre of information it must be an essential part of the general educational scheme for the area (*Ogilvie*) 15698b.

Good work is being done by (*Langridge*) 10916-22, 10934-8, 10941-3.

Institutions that are doing most for agriculture or dealing most with farmers' sons should be most encouraged (*Turnor*) 14278-90.

No system of provision of schools and colleges can be satisfactory unless it is based upon a clear conception of the requirements of the case (*Ogilvie*) 15696c.

Not always that close bond of union between, and the neighbouring counties, which is desirable (*Brooke-Hunt*) 15586a.

Object is not solely to train students (*Bickersteth*) 2997-8, 3086-91; (*Howard*) 7042-3.

Question of differentiating between various types of institutions (*Dunstan*) 1900-2; (*Hall*) 1601-3; (*Percival*) 4343-5; (*T. H. Middleton*) 15480-91; (*Turnor*) 14470.

Several do not use the financial year for their own purposes (*Brooke-Hunt*) 15550.

Students :

Difference in the attainment of, makes work difficult (*Turner*) 7824-5, 7880-1.

Importance of, residing at the institution (*W. T. Lawrence*) 7275.

Older lads make best student (*Winter*) 6727-8, 6823-30.

Value of a students' association (*Benson*) 2553-4; (*Winter*) 6884-6.

Suggests establishment of Readership in Tropical Agriculture at universities in United Kingdom (*H. S. Lawrence*) 16187-9, 16215-8, 16227-9.

Suggests that at each college a small tract of land should be used for growing fruit and vegetables on a commercial scale and students taught business methods (*Goaring*) 11073-9, 11090-2, 11105-7.

Suggests that, should be encouraged to foster and develop native breeds of stock (*Druce*) 3579, 3593-5, 3655-61; (*Winter*) 6659i, 6841-51, 6859.

Too much attention has been paid to the higher and too little to the lower type of institutions (*Simmons*) 8591-4, 8697-701, 8740.

Work in the West of England would have been more successful if it had been started from a central institution (*Hobhouse*) 14972, 14992-5, 14998-9.

Work of, cannot be judged by the number of students (*Bickersteth*) 2954; (*Brooke-Hunt*) 15590; (*Percival*) 4328-9.

Work of, should be allowed to expand (*Brooke-Hunt*) 15688-9.

Higher Agricultural Institutions :

Advantage of an institution teaching agriculture being closely connected with a University or University College (*Bickersteth*) 2993; (*Cockburn*) 10595-8; (*Hogben*) 1475-7; (*MacDonald*) 11903-4; (*T. H. Middleton*) 15459f; (*Percival*) 4131-3; (*Wood*) 188-90, 192, 198.

Agricultural colleges not of university rank should not attempt to train agricultural chemists (*Voelcker*) 13981, 13985, 14006-12.

Institutions providing Instruction in Agriculture—cont.**Higher Agricultural Institutions—cont.**

- Almost sufficient institutions of highest rank (*Brooke-Hunt*) 15587-8.
- Are an absolute necessity and are doing most valuable work, but do not reach 5 per cent. of the farmers (*Eve*) 12984-8.
- Are necessary for acquiring fresh knowledge and the training of instructors (*Simmons*) 8597-8, 8602.
- Could not also conduct a school of an intermediate type (*Hall*) 1587-91.
- Degrees and diplomas, the question of the uniformity of (*Dunstan*) 844-7; (*Hall*) 1601; (*MacDonald*) 11802-3, 11868-78; (*Woodhead*) 2200.
- Difficult to combine instruction for future farmers and teachers (*Brockholes*) 13731; (*Swanwick*) 7754-5.
- Essential that a first-class institution should have students who desire the highest possible education (*Dunstan*) 855-8, 862-7.
- Functions of institutions of university college type (*Brooke-Hunt*) 15560, 15585-6.
- Instruction given at agricultural colleges in this country is of a very poor nature (*Collinge*) 5064a, 5068-9.
- Long course at a college unfits lads for farm life (*Eve*) 13076-80, 13084, 13111-8.
- Majority of students who go to, either adopt some profession other than farming or else have assistants under them who do the details of the work (*J. W. Smith*) 12555-7.
- Not suitable for future farmers but rather for land agents (*Simmons*) 8744.
- Present supply of, sufficient (*Peet*) 12483.
- Should have a course adapted for those who can only spend one winter at college (*Chris. Middleton*) 12807-11, 12847-59, 12868-9.
- Suggests that students should be allowed to remain in the gardens not as students but more as apprentices (*Miller*) 9631-2.
- Too many students, after a course at college, take agricultural appointments rather than return to farming (*Hall*) 1542-3.
- Ultimate influence of university students compared with those of a provincial agricultural college (*Warren*) 5441-3, 5448-9.
- Work of an agricultural college not of university rank when combined with that of a university conducting research and providing a course for most advanced students, becomes equal to that of a university college (*Brooke-Hunt*) 15586b, 15587a.

Minor Agricultural Institutions :

- Evening classes in agriculture or horticulture, value of (*Goaring*) 11067-72; (*Pennant*) 6582-4.
- In this country there is nothing similar to the Irish Agricultural Stations, and in this respect Great Britain is behind Continental countries (*Campbell*) 11232-3.
- Need of institutions giving instruction in agriculture for lads from 13 to 17 or 18 years old (*Carrick*) 478-88; (*Hacking*) 6939c-e; (*Roberts*) 8212-8; (*Simmons*) 8700-2, 8706; (*Wheeler*) 6401-8; (*Winter*) 6676-81, 6759-76, 6872-4. Refer also to evidence dealing with "Bigod's Hall" and Dauntsey Agricultural School.
- Use of the word "agriculture" in connection with (*Gilchrist*) 733-8.

Agricultural Schools :

- Boys of about 15 years of age are usually in a position to commence agricultural studies (*Solomon*) 11469-70.
- Comparison between agricultural school like Dauntsey and an agricultural college (*Solomon*) 11452-5, 11474-85, 11552-3.
- Functions of (*Brooke-Hunt*) 15662b.
- Highly desirable that, should be encouraged to a limited extent (*Brooke-Hunt*) 15662-4.
- Need for more such schools (*Dunstan*) 1853-8.
- Not approve of (*Sapwell*) 245-6.
- Prefer a school devoted entirely to agricultural and technical work than one giving ordinary secondary education as well (*Peet*) 12497-506.
- Schools similar to Dauntsey would be a success in other counties (*Solomon*) 11451-5, 11474-9, 11483-5, 11535, 11552-3.

Institutions providing Instruction in Agriculture—cont.**Minor Agricultural Institutions—cont.****Agricultural Schools—cont.**

- Would like to see certain intermediate or secondary schools specialise in agriculture (*Davies*) 8287-9, 8356-73, 8386-8; (*Wheeler*) 6448-54, 6461, 6464.

Farm Institutes or Farm Schools :

- Best education for boy going to a farm school is to pass through an elementary school and then go on the land (*W. T. Lawrence*) 7264, 7411-6.
- Danger in work of farm schools overlapping that of higher institutions (*Sutton*) 4018b, 4033-5.
- Does not approve of (*Acland*) 2667-70.
- Each county would not find it profitable to establish a farm school (*D. T. Cowan*) 5245-7.
- Functions of (*Brooke-Hunt*) 15662a.
- Need of more such institutions (*Craigie*) 13210-2; (*Druce*) 3800-10; (*Eve*) 13022-4; (*W. T. Lawrence*) 7270-1; (*Simmons*) 8592-4.
- Possible that instruction similar to that given at Basing Farm School could be given by means of evening classes in centres in the county (*Percival*) 4137-43, 4202, 4308-15.
- Schools of this type most likely to meet the wants of farmers (*D. T. Cowan*) 5283-6.
- Should not take students over 16 (*Sutton*) 4018b, 4033-5.
- Students have derived more benefit from six months at a farm school than from two years at an elementary school (*W. T. Lawrence*) 7254d; (*Tinniswood*) 7159, 7198-201.
- Suggest that such schools do not need a farm as the students are for the most part sons of farmers (*Swanwick*) 7626-9, 7669, 7721-5.
- Value of, to youths whose education must end at 16 (*Childs*) 3869-73.
- Would not approve of establishing technical agricultural schools (*Bickersteth*) 3154-68, 3175-97, 3247-8.

Short Agricultural Courses :

- Advocates a young farmer attending a series of short courses (*Eve*) 13016-21, 13059-64, 13078-13080, 13143-4, 13166-8.
- Approves of (*Hale*) 13287; (*Hobhouse*) 14950-4.
- Are particularly adapted for the ordinary farmer's son (*Dunstan*) 1874-84.
- Better way of instructing young farmers than lectures (*Peet*) 12315-21.
- Comparative value of winter school and short course at a college (*Winter*) 6823-36.
- Course of lectures for youths of 15 to 18, an experiment of holding a (*Druce*) 3568-70, 3768-73.
- Excellent results have followed from extending a few lectures into a proper course of instruction (*Brooke-Hunt*) 15594-600.
- Farmers would welcome evening classes in the winter (*Dugdale*) 4903-5, 4962.
- Good thing if every lad, who is to become a farmer, could attend, a short course (*J. W. Smith*) 12215-6.
- Horticulture, as to establishing a permanent winter school of (*Goaring*) 11109-18, 11129.
- Importance of providing short practical courses which could be attended by the majority of farmers' sons (*Kidner*) 6014a-8, 6030-2, 6053-5, 6085-6, 6118-21, 6128-38, 6146-8.
- Influence of a short course on the subsequent farming of the student (*Davies*) 8335-9.
- Instruction which should be given at (*Simmons*) 8669-71.
- Maximum length of (*Simmons*) 8707-8.
- Money has been wasted on, through students not being sufficiently educated to benefit by instruction (*Hacking*) 6939c.
- Need for more short courses or winter schools (*Brooke-Hunt*) 15594-600; (*Dugdale*) 4984-91; (*Hall*) 1519.
- Only course that touches bulk of farmers (*Eve*) 13016.
- Should be mainly practical (*Hobhouse*) 15009-11.
- Student who is going to be a successful farmer ought to be able to obtain in a six months' course as much information as he requires (*Tinniswood*) 7204-9.

Institutions providing Instruction in Agriculture—cont.**Short Agricultural Courses—cont.**

- Students at, are keener than ordinary college students (*Peet*) 12402-4, 12442.
 Students should not be too long away from the practical side of farming: two winters is a sufficient period for a student to be in college (*Peet*) 12399-402.
 Suggests that the science masters at secondary schools should give instruction at agricultural winter schools (*Swanwick*) 7621, 7653-5.
 Surprising what a vast amount of information is acquired by student at (*Roberts*) 8113f.
 Valuable as a means of instructing the bulk of young farmers (*Dunstan*) 1854.
 Whether short courses should be held in the summer or winter (*Percival*) 4210-1; (*Sutton*) 4059-62.
 Would prefer extended short course to winter school (*Gilchrist*) 552-4.

INTERMEDIATE AGRICULTURAL INSTITUTIONS. See under Institutions.**IRELAND.**

Evidence received principally from (*Campbell*) 11135-11414.

- Demand for agricultural education becomes keener and keener every year (*Campbell*) 11204.
 Department has much wider view of its responsibilities than the Board of Agriculture in England (*Ogilvie*) 16075-6.
 Difficulty arising because of different management, both central and local, for agricultural and elementary education (*Ogilvie*) 15698a, 15700-3.
 In everything the Department of Agriculture does the educational side is kept to the forefront (*Campbell*) 11147.
 Policy of the Department of Agriculture with respect to agricultural education (*Campbell*) 11147, 11181b, 11183.
 Recess Committee's Report (*Campbell*) 11334-42.
 Strength of the Department of Agriculture is that it is fully in touch with all sections of agricultural education and of technical education (*Ogilvie*) 15703.

Agricultural Schools for Girls, annual expenditure on (*Campbell*) 11144a.
 Munster Institute, Cork (*Campbell*) 11174a-7.
 Residential and day schools (*Campbell*) 11177a-11180a.

Agricultural Schools for Males (*Campbell*) 11144a, 11269-11274.
 Agricultural College, Glasnevin (*Campbell*) 11162a-11164, 11166-7, 11371-3.
 Provincial institutions (*Agricultural Stations*), (*Campbell*) 11165a, 11168a-9, 11234-9, 11299-11315, 11374-83.
 Royal College of Science, Dublin (*Campbell*) 11148a-62, 11166-8, 11275-83, 11373.
 Research conducted at (*Campbell*) 11240, 11407-8.
 Winter schools of agriculture (*Campbell*) 11169a, 11174, 11207, 11383-6.

Council of Agriculture and Agricultural Board:
 Constitution and powers of (*Campbell*) 11343-52, 11406.

County Committees:
 Instruction provided by (*Campbell*) 11143a, 11181a, 11204-6, 11208-13.
 Relations with the Department (*Campbell*) 11143a, 11350-5.

Elementary and Intermediate Schools:
 Agriculture is not taught in (*Campbell*) 11181c-11182, 11298-309, 11387-90.

Finance:

- Amount available for agricultural education and methods by which funds are obtained (*Campbell*) 11141-3, 11170.
 Items of expenditure (*Campbell*) 11141-7, 11242-11246, 11266-8.
 No money given to any county unless a rate is raised (*Campbell*) 11143a.
 Work has been facilitated by the fact that the Department has been able to "bank" money not used in any one year (*Campbell*) 11170-3.

Ireland—cont.

- Forestry, School of** (*Campbell*) 11144a, 11180a-1.
Improvement of Creameries (*Campbell*) 11146a, 11265, 11361-4.
Irish Agricultural Organisation Society (*Campbell*) 11144a-6, 11202, 11359-61, 11365-7.
Leaflets, distribution of (*Campbell*) 11404-5.
Live-stock Schemes (*Campbell*) 11142a, 11143c-4, 11147-8, 11205, 11246-64, 11284-94, 11320-3.
Marketing of Irish Produce in Great Britain (*Campbell*) 11146c.
Pioneer Lectures (*Campbell*) 11146d.
Poultry Instruction (*Campbell*) 11142b.
Special Investigations and Experiments (*Beaven*) 14156; (*Campbell*) 11146b, 11411.
Supplemental Schemes in the poorer districts in the West of Ireland (*Campbell*) 11143b.

ITALY. See under Colonial and Foreign Countries.

"JOURNAL OF AGRICULTURAL SCIENCE"
 (*T. H. Middleton*) 15460b.

KEEBLE, Mr. F. W., M.A., D.Sc. Director of the Horticultural Department of the University College, Reading.

Evidence, 4237-4264, 4385-4450.

KENT.

- Experiments with cold storage (*W. P. Wright*) 10174-10175, 10221-5.
 Horticulture (*W. P. Wright*) 10121-6, 10128-30, 10133-5.
 Garden competitions (*W. P. Wright*) 10127-8.
 Regrets that there are no continuation school gardens in (*W. P. Wright*) 10150, 10212, 10231, 10251.
 School gardens (*W. P. Wright*) 10140-3, 10240-6.
 See also under South Eastern Agricultural College.

KIDNER, Mr. S. Member of the Somerset County Council.

Evidence, 6011-6151.

LABOURERS.

- Difficult to find labour (*Langridge*) 10924-5, 10944-9, 10978-80.
 Lectures given by members of college staff are scarcely suitable for (*Sapwell*) 244, 258, 307, 312.
 Schools for, should take students at 13 years of age (*McCracken*) 9316-26.
 System adopted in Worcestershire, of apprenticing boys under practical expert for a course of instruction (*Wheeler*) 6416-20, 6433-5, 6472-3.
 Thinks that if one attempts to teach a working foreman much science it will spoil him (*Eve*) 13065-75.

Provision of Instruction for:

- Instruction should be provided for (*Goodchild*) 1067h, 1069; (*Langridge*) 10937, 10980-3.
 Need for practical schools for labourers (*McCracken*) 9227-34, 9325-9.
 Secret of keeping men on the land is to encourage them to better their position financially (*Simmons*) 8687.
 Suggests that as an experiment a practical school for labourers' sons should be started (*Brooke-Hunt*) 15603-10.

See also under Essex County Technical Laboratories; Ridgmont Agricultural Institute, South Eastern Agricultural College, &c., &c., and also Subjects of Instruction, Horticulture and Manual Processes.

LANCASHIRE.

- Evidence received principally from (*Hale*) 13260-13504; (*Porter*) 13505-13659; (*Brockholes*) 13660-13827.
 Agricultural Sub-committee (*Brockholes*) 13675-9.
 Attitude of County Council towards agricultural education (*Brockholes*) 13680.
 Question of co-operating with other counties and with the University of Manchester for the purposes of agricultural education (*Brockholes*) 13818-27; (*Hale*) 13481-98; (*Porter*) 13634-46.

Lancashire—cont.

Advice and Assistance to Adult Farmers (*Hale*) 13305-13308, 13311-3, 13341-5; (*Porter*) 13529-39.

An extension of the system of personal visits and advice would be appreciated (*Brockholes*) 13681-8, 13770-80.

Attitude of Agriculturists, *see that title*.

Dairying instruction by means of itinerant instructors (*Brockholes*) 13683-5; (*Hale*) 13297, 13339-41; 13347-52, 13462-4; (*Porter*) 13589-99.

Effect of instruction on price of produce (*Hale*) 13551-73, 13453-61, 13600-4.

For fixed dairy school, *see* Hutton Farm below.

Experiments (*Brockholes*) 13708-11, 13792; (*Porter*) 13581-5.

Farriery (*Hale*) 13374-6, 13432-40.

Finance :

Cost of instruction (*Brockholes*) 13801-4; (*Hale*) 13346-9, 13499-500.

Grant given to Liverpool and Manchester Universities (*Brockholes*) 13737-8.

See also under Harris Institute below.

Harris Institute :

Analyses (*Porter*) 13656-9.

Courses of instruction (*Brockholes*) 13674, 13733; (*Hale*) 13265, 13277-8, 13283-4, 13288-93, 13295-7, 13417-31, 13502-3; (*Porter*) 13519, 13553-6, 13560-7, 13575-7.

Elementary school teachers, *see that title*.

Example of an institution in which there has been some difficulty in determining the precise limits of work in respect of which the grants from Boards of Agriculture and Education have been payable (*Ogilvie*) 15696d, 16032-5.

History of the establishment of (*Brockholes*) 13665a; (*Hale*) 13270.

Scholarships, *see below* Scholarships given by the County Council.

Sources of income (*Hale*) 13271, 13329.

Students :

Fees charged to students coming from outside Lancashire (*Porter*) 13647-9.

No fees charged to students from Lancashire (*Hale*) 13325-31, 13404; (*Porter*) 13546-9, 13614-5.

Number of (*Hale*) 13479, 13501; (*Porter*) 13568-75.

Other students than those studying agriculture attend the Institute (*Hale*) 13314, 13477-8.

Previous education of, *see that title*.

Residential accommodation for (*Brockholes*) 13665c; (*Porter*) 13621-3.

Type of student and their after-careers (*Brockholes*) 13725a-7, 13731-3, 13738, 13794-800; (*Hale*) 13266-9, 13277-9, 13282, 13285-7, 13293, 13467-71; (*Porter*) 13512-8, 13520-3, 13549, 13647.

Success of students at National Diploma examinations (*Brockholes*) 13667, 13673-4.

Hutton Farm (*Brockholes*) 13698, 13756, 13787-91, 13793; (*Hale*) 13302, 13315, 13377-9.

Cows at, have suffered severely from tuberculosis (*Brockholes*) 13781-2; (*Hale*) 13383-8, 13406-9.

Dairying and poultry-keeping (*Brockholes*) 13699-13703; (*Hale*) 13265, 13319-24, 13380-3, 13450-1; (*Porter*) 13587-8.

Experimental work (*Brockholes*) 13705.

Students :

After-careers of (*Grant*) 10440.

No fees charged to students from Lancashire (*Hale*) 13325-8.

Number of (*Hale*) 13350-1; (*Porter*) 13586.

Residential accommodation (*Brockholes*) 13665c.

Lectures (*Hale*) 13298-9, 13389-99, 13410-6.

Poultry-keeping, itinerant instruction (*Brockholes*) 13686-7; (*Hale*) 13336-9.

Scholarships given by County Council and tenable at the Harris Institute and at institutions of a more advanced character (*Brockholes*) 13674, 13759-69; (*Hale*) 13332-5, 13400-5; (*Porter*) 13524-8, 13605-13615, 13741-55.

School Gardens (*Brockholes*) 13680.

Staff (*Brockholes*) 13694-7.

LANGRIDGE, Mr. GEORGE. *Late President of the Surveyors' Institution.*

Evidence, 10893-11025.

LAWRENCE, Mr. H. S., *Director of Agriculture in Bombay.*

Evidence, 16134-16272.

LAWRENCE, Mr. W. T. *Manager of the Cumberland and Westmorland Farm School, Newton Rigg.*

Evidence, 7217-7441.

LECTURES, AGRICULTURAL, given to farmers by members of the staff of agricultural colleges and county councils.

Audience :

Are not sufficiently uniform to make lectures successful (*Wood*) 47-51, 104, 177-82.

Farmers will come to lectures to-day, whereas twenty years ago they would not (*Sutton*) 4025-8.

Lectures are not so successful as they should be owing to the previous education of the audiences (*Turnor*) 14252-5, 14350-1, 14393-4.

Lectures are not suitable for labourers (*Sapwell*) 244, 258, 307-12.

Lectures would be more successful if farmers were first led to take an interest in the college (*Turnor*) 14252-5.

Never met with any great amount of prejudice (*Gilchrist*) 692.

Lecturer :

Farmers soon find out if the lecturer is not keeping himself up-to-date (*Cave*) 9565-6.

Lectures are now being given properly (*Brooke-Hunt*) 15592a, 15593, 15602.

Must know his subject from a practical as well as a scientific point of view and be able to impart his knowledge (*Brockholes*) 13690-1; (*Carrick*) 345-7, 386-7; (*Eady*) 9429-36; (*Gilchrist*) 692-3; (*Hobhouse*) 14945-9; (*Simmons*) 8600-1.

Should be attached to an agricultural institution (*Percival*) 4381-4; (*Wood*) 132-6.

Local Organisation :

Success of a lecture often depends on local organisation (*Amos*) 892-8; (*Cave*) 9504; (*Dugdale*) 4892; (*Dunstan*) 803-4.

Subject of :

Should deal with some specific point or the results of experiments rather than general principles (*Bickersteth*) 3217-28; (*Blackshaw*) 1689b, 1690-2; (*Hacking*) 6990-6; (*Hale*) 13389-99, 13410-6; (*Laurence*) 7425-7; (*Pennant*) 6493a; (*Swanwick*) 7704-16, 7734.

Should deal with very definite subjects and not consist of general information (*Hall*) 1484, 1534-7; (*Percival*) 4176, 4190-3.

Value of :

Arouse interest, but leave little permanent impression (*Household*) 8056; (*Turner*) 7785.

Effective as a means of recruiting students for agricultural college (*Cope*) 1651c; (*Gilchrist*) 667; (*Roberts*) 8113e.

Lot of money has been wasted on lectures (*Hacking*) 6939d, 6988-96.

Not of much benefit to farmers (*Hale*) 13302-4, 13389-99, 13410-6.

Not so necessary now that interest in agricultural education has been created (*Craigie*) 13179-80.

Useful means of staff getting in touch with farmers (*Hall*) 1485-6; (*Turnor*) 14256.

Valuable as a means of stirring up enthusiasm (*Dugdale*) 4892.

Where lectures have been given the prejudices of farmers have to a great extent been broken down (*Brooke-Hunt*) 15600-2; (*Roberts*) 8138.

Wherever lectures have been continuously given the instruction has shown a steady rise in character (*Brooke-Hunt*) 15592a.

LEEDS, UNIVERSITY OF.

Evidence received principally from (*Bickersteth*) 2927-2998, 3080-3300; (*Fisher*) 2999-3042; (*Seton*) 3043-3079.

Board of Agriculture, relations with (*Bickersteth*) 2956-8, 2978-9, 3214-6.

Leeds, University of—cont.

- Directions in which development is needed (*Bickersteth*) 3169-74.
- Formation of the agricultural department (*Bickersteth*) 2929-31.
- Governing body (*Bickersteth*) 2942, 2975-9.
- Midland Agricultural and Dairy College, relations with, *see under* the Midland College.
- Publications of (*Bickersteth*) 3256-60.

Attitude of Agriculturists towards, *see that title*.

- Courses of Instruction** (*Bickersteth*) 2944-6, 2955, 2973, 2988-9, 3198-208, 3230-2; (*Seton*) 3044, 3054, 3056, 3079.

Elementary school teachers, *see that title*.

External Work :

- Experiments (*Bickersteth*) 2933b, 2948-9; (*Seton*) 3056a, 3068.
- Farriery instruction (*Bickersteth*) 2952; (*Seton*) 3070-2.
- Horticulture (*Seton*) 3056c-9.
- Centres for teaching fruit culture (*Bickersteth*) 2951; (*Seton*) 3056c-9.
- Lectures (*Bickersteth*) 2949-50, 3217-28; (*Seton*) 3056b, 3069.
- Cannot speak too highly of (*Chris. Middleton*) 12813.

Farm at Garforth (*Bickersteth*) 2933a, 2963-4.

Finance :

- Financial position (*Bickersteth*) 2961-5; (*Seton*) 3047-8.
- Need further assistance from national funds (*Bickersteth*) 2933c-4.
- Sources of income (*Bickersteth*) 3080-4.

Research Work (*Bickersteth*) 3092a, 3096-8, 3148-50; (*Seton*) 3074b, 3075-8.

Scholarships tenable at (*Bickersteth*) 2932, 2953, 3124-3131, 3151-3, 3160-1, 3213, 3233-45, 3265-80, 3297-300.

Staff (*Bickersteth*) 2996, 3217-8, 3253-5; (*Seton*) 3045-6, 3054a.

Students :

- Fees (*Bickersteth*) 2932.
- Number of (*Bickersteth*) 3085-6.
- Previous education of, *see that title*.
- Type of student and their after-careers (*Bickersteth*) 3145-6, 3281-3; (*Fisher*) 3029-30; (*Seton*) 3049, 3053a.

LINCOLN, KESTIVEN DIVISION OF (*Turnor*) 14479-14481.

LIVE-STOCK. *See under* Subjects of Instruction.—Agriculture.

LIVERPOOL UNIVERSITY.

- Information as to the possibility of over-lapping with Manchester University if provision was made for agricultural instruction at Liverpool will be found under Manchester University.

LLEWENNI, DAIRY SCHOOL AT. *See under*, Bangor, University College of North Wales.

LODGE, Sir OLIVER, F.R.S., D.Sc., LL.D. Principal of the University of Birmingham.

Evidence, 5472-5541.

M'CLELLAN, The Rev. J. B., M.A. Principal of the Royal Agricultural College, Cirencester. (Qualifications of witness, *see* 9983-4.)

Evidence, 9890-10112.

MANCHESTER, VICTORIA UNIVERSITY OF.

Evidence received principally from (*Hopkinson*) 8855-8936; (*Weiss*) 8937-8959.

Elementary school teachers, instruction for, *see that title*.

Governing Body (*Hopkinson*) 8934-6.

Length of residence required for a degree (*Hopkinson*) 8925-8.

Present courses of study (*Hopkinson*) 8873-5, 8882-8895.

Suggested lines of development as regards agriculture (*Hopkinson*) 8871-2, 8876-8, 8918-22.

Area from which students are principally drawn at the present time and would be likely to come for agricultural instruction (*Hopkinson*) 8867-9, 8880-1.

Manchester, Victoria University of—cont.

Financial position and prospects (*Hopkinson*) 8858b, 8879, 8896-900.

See also under Lancashire.

Lecturers in economic zoology and botany recently appointed (*Hopkinson*) 8858a.

Work to be undertaken by (*Hopkinson*) 8858a, 8862-4.

Liverpool University, the possibility of over-lapping with, if provision is made for instruction in agriculture at (*Hopkinson*) 8868, 8901-8917, 8922-4.

Work being conducted at present time in subjects bearing on agriculture (*Hopkinson*) 8857-62, 8863a-8866, 8999; (*Weiss*) 8940-6, 8952-4.

McCRACKEN, Mr. W. Agent to the Earl of Crewe and formerly Professor of Agriculture, Royal Agricultural College, Cirencester.

Evidence, 9206-9353.

MacDONALD, Mr. JAMES. Secretary to the Highland and Agricultural Society of Scotland.

Evidence, 11758-11914.

McFADYEAN, Sir JOHN, M.B., B.Sc., F.R.S.E., M.R.C.V.S. Principal of the Royal Veterinary College, London.

Evidence, 9674-9754.

MANNINGTON, Mr. Wm. Chairman of the Agricultural Sub-Committee of the East Sussex County Council.

Evidence, 1972-2153.

MANUAL PROCESSES OF AGRICULTURE. *See under* Subjects of Instruction.

MEAD, Mr. P. J., Acting Director of Agriculture and Co-operative Credit Societies, Bombay. *See* (*H. S. Laurence*) 16163-5, 16168, 16172, 16220-4, 16253, 16271-2.

METEOROLOGICAL OFFICE.

Distribution of the Weekly Weather Report and special harvest forecasts (*Mill*) 6303-6, 6366-7.

Principal duties of (*Mill*) 6333-6, 6343.

METEOROLOGY. *See under* Subjects of Instruction.

MIDDLETON, Mr. CHRISTOPHER. Member of the Council of the Royal Agricultural Society of England. (Qualifications of witness, *see* 12782-8, 12883.)

Evidence, 12782-12908.

MIDDLETON, Professor T. H., M.A., M.Sc. Assistant Secretary to the Board of Agriculture and Fisheries, and Member of the Committee, formerly Professor of Agriculture, Cambridge University. (Qualifications of witness and information as to education, &c., *see* 15437-41, 15482, 15494-5.)

Evidence, 15437-15514.

MIDLAND AGRICULTURAL AND DAIRY COLLEGE, KINGSTON, DERBY.

Evidence received principally from (*Cope*) 1640-1661 (*Blackshaw*) 1662-1833.

Advice and assistance given to farmers (*Blackshaw*) 1680b, 1692; (*Cope*) 1653a.

Board of Agriculture, relations with (*Blackshaw*) 1803-7.

Building accommodation (*Blackshaw*) 1662-4, 1680, 1687-8, 1702, 1705; (*Cope*) 1643a.

Governing Body (*Blackshaw*) 1793-1802; (*Cope*) 1645.

History of the formation of (*Blackshaw*) 1662-4 (*Cope*) 1642-3.

Leeds University, relations with (*Bickersteth*) 2955 (*Cope*) 1643e.

Relations with contributing counties (*Blackshaw*) 1670-1, 1708-9, 1750-2.

Midland Agricultural and Dairy College—cont.**Attitude of Agriculturists** towards, *see that title*.**Courses of Instruction** (*Blackshaw*) 1676-7, 1679, 1725-31, 1736, 1745; (*Cope*) 1643*b*, *d*.
Elementary school teachers, *see that title*.
Examinations (*Blackshaw*) 1682-6, 1713-7.**External Work :**Experiments (*Blackshaw*) 1689, 1651*a*; (*Turnor*) 14305-9, 14405.System of following experiments with lectures (*Blackshaw*) 1689*a*-92, 1718-21.Lectures (*Blackshaw*) 1672-5, 1689*a*, 1763; (*Cope*) 1651*b*.**Finance :**Financial position (*Blackshaw*) 1710-2, 1778-80; (*Cope*) 1643*c*, 1644*a*, 1646-9.Sources of income (*Blackshaw*) 1665, 1670, 1787-1789; (*Cope*) 1660-1.**Research Work** (*Blackshaw*) 1681, 1706.**Scholarships** tenable at (*Blackshaw*) 1712, 1764-6, 1832-3.**Staff** (*Blackshaw*) 1678, 1722-4.Inadequate (*Blackshaw*) 1680*a*, 1703-4.Inadequately paid (*Blackshaw*) 1703*a*, 1784-6, 1818-20.**Students :**Fees (*Blackshaw*) 1670*a*, 1781-2.Higher, charged to students from outside the contributing counties (*Cope*) 1644*a*.Outside students' fees cover the cost only when certain courses are taken (*Blackshaw*) 1812.Number of (*Blackshaw*) 1740-1, 1746-8; (*Cope*) 1654-6.Residential accommodation for (*Blackshaw*) 1687-1688.Type of student and their after-careers (*Blackshaw*) 1732-3, 1790-2, 1828-30; (*Turnor*) 14279, 14290.Very good results have always followed from a course at the College (*Turnor*) 14251, 14399-14400.**MILL, Mr. H. R., D.Sc., LL.D.** *President of the Royal Meteorological Society.*

Evidence, 6292-6398.

MILLER, Miss A. *Formerly student in the Horticultural Department of the University College, Reading, and now cultivating a market garden at Farnham.* (Qualifications of witness and information as to her holding, *see* 9594-9, 9618-21, 9624-7, 9645-60, and also (*Keeble*) 4405-11.)

Evidence, 15437-15514.

MONMOUTH.*Evidence received principally from* (*Grant*) 10287-10521.Agricultural Committee (*Grant*) 10289-92, 10486.Question of co-operating with other counties to support agricultural college or school (*Grant*) 10496-10506.Relations with Board of Agriculture (*Grant*) 10418-10423.**Attitude of Agriculturists**, *see that title*.**Finance :**Cost of agricultural instruction (*Grant*) 10293-9, 10353-4, 10517-21.Effect that a grant from Board of Agriculture would have (*Grant*) 10419.Some provision, from other than county funds, should be made for extending work (*Grant*) 10412, 10415, 10420-1, 10431-4.Sources of income of the Agricultural Committee (*Grant*) 10433-5, 10517-21.**Scholarships**, *see* *above*, to enable promising students to attend courses at an agricultural college (*Grant*) 10426*a*-9.**Scope of Instruction**, with information as to the effect that the instruction has had :**Monmouth—cont.****Scope of Instruction—cont.**Advice to, and analyses for, agriculturist, assistance to agricultural and horticultural societies (*Grant*) 10396-7, 10409-11, 10462-6, 10490, 10511-6.Bee-keeping (*Grant*) 10373.Dairying (*Grant*) 10300, 10304-8, 10322-9, 10334-10341, 10344-50.Experiments (*Grant*) 10402-8, 10462.Farriery and veterinary hygiene (*Grant*) 10363-10368, 10398-401.Horticulture (*Grant*) 10370-1, 10374.Instruction at Reformatory School (*Grant*) 10383-10384, 10387-95.Instruction given to elementary school children (*Grant*) 10309-21, 10471-84.Manual processes (*Grant*) 10356-8, 10375-81.Poultry keeping (*Grant*) 10372.**Staff** (*Grant*) 10346, 10362, 10366.**Students :**Fees (*Grant*) 10301, *see also* note at the end of statement which follows 10521.Number of (*Grant*) 10302-3.Residential arrangements (*Grant*) 10351-2, 10355.Type of student and their after-careers (*Grant*) 10345, 10385-6, 10415-6.**MORELAND, Mr. W. H., C.I.E.** *Director of the Department of Land Records and Agriculture in the United Provinces of Agra and Oudh.*

Evidence, 16273-16306.

MORGAN, Professor LLOYD, LL.D., F.R.S. *Principal of the University College, Bristol.*

Evidence, 5929-6010.

NATIONAL ASSOCIATION OF BRITISH AND IRISH MILLERS.Work of the Home-Grown Wheat Committee (*Humphries*) 13835*a*, 13836, 13838*a*, 13867-8, 13879-80, 13886-8.**NATIONAL DIPLOMA EXAMINATIONS.** *See under* Examinations.**NATIONAL FRUIT AND CIDER INSTITUTE AT LONG ASHTON, near BRISTOL.***Evidence received principally from* (*Barker*) 8405-8577.Aim of (*Barker*) 8409, 8427*a*, 8462-4, 8526.Bristol University College, relations with, *see under* Bristol.Building, plant and land attached (*Barker*) 8409*b*, 8414-7, 8420-1, 8427*c*, 8535-41.Governing Body (*Barker*) 8409*b*-10, 8443-6.Great future before the (*Grant*) 10369.History of the formation of (*Barker*) 8409.Importance and extent of the cider and fruit industry, *see under* Subjects of Instruction, Horticulture.Members and associates (*Barker*) 8411-2, 8431*e*.Relations with supporting counties (*Barker*) 8431*g*-2.
See also under Gloucester.Splendidly conceived, and work will be ultimately of the greatest benefit (*J. W. Smith*) 12285-6.**Attitude of Agriculturists** towards, *see that title*.**Finance :**Financial position and arrangements (*Barker*) 8412-3, 8417-9, 8422-5, 8442-6.Comparatively small increase in income would mean a relatively large increase in amount of work which will prove profitable to cider and fruit grower (*Barker*) 8431*b*, 8457-8, 8470-4, 8481.Sources of income (*Barker*) 8409*a*, 8410.At present time no prospect of receiving more funds from county councils (*Barker*) 8448-50.Comparison between amount of grant received from Board of Agriculture and of that given to other institutions (*Barker*) 8465-9.Counties which support (*Barker*) 8409*a*.Work limited in certain respects owing to the fact that the Institute depends to a great extent on grants from county councils which can only be given for educational work (*Barker*) 8432*b*, 8459-61.

National Fruit and Cider Institute at Long Ashton—cont.**Scope of Work :**

- Educational and consultative (*Barker*) 8431c, 8435-7, 8439-41, 8475-8, 8499-511, 8514-5, 8519-21.
- Limits upon which educational work could be extended (*Barker*) 8526, 8544-77.
- Steps taken to promote welfare of the industry (*Barker*) 8431g, 8482-3.
- Working pupils (*Barker*) 8431d, 8434, 8522-5.
- Fees for (*Barker*) 8525.
- Experimental and research (*Barker*) 8427e, 8428-8430a, 8430c, 8431a.
- Important lines of research left untouched owing to want of staff (*Barker*) 8430b, 8480, 8529, 8542-3.

Staff (*Barker*) 8427b.

- Additional assistants required for research work (*Barker*) 8542-3.
- Type of man required (*Barker*) 8490-8.
- Work limited both as regards education and research by lack of staff (*Barker*) 8427d, 8431g, 8432a.

NATIONAL POULTRY ORGANISATION SOCIETY.

Educational Work of (*Brown*) 6215-21, 6225.

NATURE STUDY. *See under* Previous Education.**NEW ZEALAND.** *See under* Colonial and Foreign Countries.**NEWTON RIGG, near Penrith, CUMBERLAND AND WESTMORLAND FARM SCHOOL AT,**

Evidence received principally from (*Howard*) 6997-7111 ; (*Tinniswood*) 7112-7216 ; (*W. T. Lawrence*) 7217-7441.

- Aim of the instruction (*W. T. Lawrence*) 7254e-5, 7323, 7413, 7417-8.
- Analyses (*W. T. Lawrence*) 7374-5.
- Armstrong College, relations with (*Howard*) 7045-6 ; (*W. T. Lawrence*) 7243-5, 7261-3, 7278 ; (*Tinniswood*) 7116-8.
- Scholarships awarded, tenable at (*Howard*) 7012 ; (*W. T. Lawrence*) 7321-6 ; (*Tinniswood*) 7116-8.
- Building accommodation (*Howard*) 7098-9.
- Governing Body (*Howard*) 7025, 7032-5 ; (*Tinniswood*) 7165-7.
- Attitude of county councils towards expenditure upon agricultural education (*Howard*) 7061-3, 7066, 7097.
- Question of co-operating with other counties (*Howard*) 7037-42, 7085-8, 7100-1, 7106-11.
- Westmorland, as to whether more advantage could be taken of the school by (*W. T. Lawrence*) 7306-8.

Attitude of Agriculturists towards, see that title.

- Courses of Instruction** (*Howard*) 7020 ; (*W. T. Lawrence*) 7218, 7223-38, 7242-7, 7249, 7254b-d, 7256-63, 7265-6, 7275, 7334-50, 7353-4, 7367-8, 7375-8, 7381-2, 7435-8.
- Elementary school teachers, *see that title.*

External Work :

- Dairy instruction (*Howard*) 7000a ; (*W. T. Lawrence*) 7331, 7349, 7352-3.
- Experiments (*Howard*) 7064-6 ; (*W. T. Lawrence*) 7276-9, 7369-73, 7386-98 ; (*Tinniswood*) 7118, 7210-6.
- Lectures (*Howard*) 7006-7, 7016-8, 7048-9, 7056, 7071-3 ; (*W. T. Lawrence*) 7379-80, 7425-7.

Farm (*Howard*) 6999a, 7022-4 ; (*W. T. Lawrence*) 7319-20.**Finance :**

- Entitled to further grants from Government (*Howard*) 7030-1, 7066-8.
- Financial position (*Howard*) 6999-7000, 7026-31, 7061-3, 7077-8, 7080-2 ; (*W. T. Lawrence*) 7433-4, 7440-1.
- Need for further funds (*Tinniswood*) 7154-5.
- Westmorland, proportion of cost borne by (*Howard*) 6999, 7094-6 ; (*W. T. Lawrence*) 7305-8.

- Staff** (*Howard*) 7015 ; (*W. T. Lawrence*) 7248-53, 7256-9, 7383-5.
- Require an increased (*Tinniswood*) 7156-8.

Newton Rigg, near Penrith, Cumberland and Westmorland Farm School at—cont.**Students :**

- Fees (*Howard*) 7041 ; (*W. T. Lawrence*) 7889-97.
- How students are selected (*W. T. Lawrence*) 7281-2, 7286, 7327-30.
- Number of (*Howard*) 7092-3 ; (*W. T. Lawrence*) 7254c, 7284, 7298, 7419-23.
- Could be easily increased by taking pupils from outside the two counties (*W. T. Lawrence*) 7419-7424.
- Residential accommodation is as much as is required at present time, but does not admit of taking pupils from outside the counties (*W. T. Lawrence*) 7239-41, 7282-7, 7329-30.
- Type of student and their after-careers (*Howard*), 7057-9, 7219-22, 7233-4 ; (*W. T. Lawrence*) 7254a, 7255, 7264, 7266-9, 7271-5, 7299-302, 7306, 7354-66 ; (*Tinniswood*) 7202-4.

NICHOLAS, Mr. J. H., M.A. *Secretary to the Essex Education Committee.*

Evidence, 951-1066, 1188-1239.

NORFOLK.

- Aim is to help those that help themselves (*J. A. Smith*) 14502b.
- Farriery instruction has done very good work (*Sheather*) 10819-20.
- Proposal to establish a demonstration farm in, which would be put under the supervision of Cambridge University (*Sapwell*) 241b, 247-51, 275-84, 313.
- Scholarships (*Sapwell*) 241c, 262, 272-4, 290, 314 ; (*J. A. Smith*) 14511b, 14534.

NORTH-EASTERN COUNTY SCHOOL, BARNARI CASTLE.

- Agricultural side has not been taken much advantage of, the farmers being rather indifferent to it (*Gilchrist*) 670-8, 732-8 ; (*Chris. Middleton*) 12804, 12865.
- Would be a loss to the district if the agricultural side was allowed to go down (*Gilchrist*) 625.
- Provides an education at considerably less than cost price (*Chris. Middleton*) 12805-6.
- Students :**
- Instruction has been of benefit to boys who have been unable to proceed to agricultural college (*Chris. Middleton*) 12863-5.
- Type of (*Gilchrist*) 540-1, 670-1.

OFFERTON DAIRY RESEARCH STATION. *See under* Armstrong College.**OGILVIE, Mr. F. GRANT, C.B.** *Principal Assistant Secretary for Technology and Higher Education in Science and Art under the Board of Education* (Qualifications of Witness, *see* 15699a, 15740, 16015-7).

Evidence, 15690-16133.

ORGANISATION AND CONTROL OF AGRICULTURAL EDUCATION.

For information on the subject of finance, see under Expenditure upon Agricultural Education.

- Agricultural education needs looking at as a whole (*Brooke-Hunt*) 15665-7.
- Comparison between systems in England and Ireland (*Campbell*) 11183, 11190-3, 11218-24, 11232, 11358.
- Departmental Committee on Agricultural and Dairy Schools, 1888, (*Craigie*) 13176c.
- Report of, has been largely followed by Board of Agriculture (*Brooke-Hunt*) 15588-9.
- Economy and educational advantage of co-ordinating the various sections of education in a rural area (*Ogilvie*) 15696e-9.
- Education will in the future be taken greater advantage of (*Mannington*) 2115-6.
- History of the origin of the assistance given by the State to agricultural education (*Craigie*) 13175-7, 13178a, 13180.
- In Great Britain there is nothing similar to the Irish Agricultural Stations and in this respect this country is behind continental countries (*Campbell*) 11232-3.

Organisation and Control of Agricultural Education—cont.

- Impossible to benefit agriculture without benefiting other industries (*Turnor*) 14259.
- It is necessary for the State to provide the means of instruction for the sons of larger farmers, but they do not need the personal aid the smaller men do (*Eve*) 12986, 13056, 13134-7.
- Movement for organised agricultural education dates, not from beginning of agricultural depression but from the most palmy and successful days of agriculture (*Craigie*) 13175b.
- Need for a consecutive and complete scheme of agricultural education from elementary school to the higher colleges (*Turnor*) 14231-8, 14247-52, 14258-14259, 14264, 14268, 14275-6, 14330, 14332-7, 14358, 14378-82, 14389.
- No system of provision of schools and colleges can be satisfactory unless it is based upon a clear conception of the requirements of the case (*Ogilvie*) 15696c.
- Person it is most necessary to consider is the working farmer (*J. W. Smith*) 12288-90.
- Reason the State should assist agriculture (*Peter*) 9794, 9813-9.
- Smaller farmers are more difficult to get in touch with (*Hall*) 1529-33.
- Suggests system of travelling fellowships for staff and students (*Winter*) 6663d, 6672-3, *refer also to Staff*.
- Whether there is any inconsistency in the State providing assistance to men employed in agriculture but not to those employed in other industries (*Lodge* 5512-4; (*Morgan*) 5952-8, 6007-9; (*Ogilvie*) 15990-6.
- Whole scheme of education from elementary school through evening classes and secondary schools up to the college or University requires looking at as a whole (*Household*) 8037-86, 8092-8.

Agricultural Societies :

- Part that might be taken by, in regard to agricultural education (*Beaven*) 14205-6; (*Hobhouse*) 14954-5; (*MacDonald*) 11813-21; (*Chris. Middleton*) 12893-7; (*Tinniswood*) 7121a.

County Councils :

- Are being charged with greater powers in educational matters (*Warren*) 5438-40.
- Are likely to neglect higher forms of education (*Hobhouse*) 15006, 15023-4.
- Importance of Education Committees appointing a sub-committee to deal with agricultural education (*Percival*) 4117; (*Stiby*) 12521-12534; (*Sutton*) 4058.
- Comment upon this (*Ogilvie*) 16089-93.
- Importance of the local education authority having direct relation with all education within its area (*Ogilvie*) 15706a.
- Value of an Agricultural Committee appointed by the County Council to deal with agricultural education and all other matters relating to agriculture (*Acland*) 2675, 2712-4; (*Beaven*) 14170; (*Fitzmaurice*) 7840f, 7841-3, 7848-50, 7853-9, 7863-8; (*Grant*) 10412a, 10413-5, 10417, 10487-91; (*Hobhouse*) 14885-8; (*Chris. Middleton*) 12872-3; (*J. A. Smith*) 14533-4, 14570-1; (*Stiby*) 12514-28.
- To appoint such a Committee would effectively cut out the agricultural interests from the region of general and secondary education in the rural community (*Ogilvie*) 15706b.
- Whether, would agree to submit annually to the Board of Agriculture a scheme of agricultural education for the county, and the benefit that would result if this were done (*Acland*) 2673-4; (*Bickersteth*) 2956-8; (*Carrick*) 472-4; (*Dunn*) 11996; (*Eve*) 13159-60; (*Grant*) 10492-5; (*Hobhouse*) 15026-8; (*Phipps*) 9201-2; (*Sapwell*) 294-6; (*Turnor*) 14471-4; (*Wheeler*) 6443-4.
- Work in a county should be done by a staff responsible to the county (*Grant*) 10426, 10436-42.
- Work of the, has on the whole been of an excellent character (*Brooke-Hunt*) 15592.

Extent of the Provision of Agricultural Education :

For information as to institutions, see that title.

Advance which agricultural education has made in the past 17 years (*Eve*) 13036-42.

Organisation and Control of Agricultural Education—cont.*** Extent of the Provision of Agricultural Education—cont.**

- Facilities for educating the farmer's son are as good in this country as on the Continent (*Campbell*) 11229-33.
- Importance of further provision (*Drewitt*) 12171-12173.
- Increase in the provision of agricultural education in the last 20 years (*Craigie*) 13178b, 13180.
- Little provision previous to 1889 (*Davies*) 8256a.
- Local authorities are daily extending their work (*Ogilvie*) 15733.
- No lack of facilities in the North of England (*Chris. Middleton*) 12788, 12792, 12802.
- Provision of higher agricultural education still very defective (*Hobhouse*) 14840.

Government Department or Central Authority :

- Advocates the transfer of the educational powers and duties of the Board of Agriculture to the Board of Education; all educational grants from the State should go through the Board of Education (*Ogilvie*) 15708-14, 15721-2, 15748-15765, 15785-96, 15807-25, 15926-7, 15997-8, 16025-8, 16042-7, 16087-101, 16113-5.
- Arrangement between the Boards of Agriculture and Education by which agricultural teaching other than that of university standard should be subsidised by the Board of Education; and as to whether this arrangement should be revised (*Ogilvie*) 15719-20, 15732, 16042-3, 16115-33.
- Danger of overlapping between Boards of Agriculture and Education (*Lodge*) 5505-6, 5530-5541.
- Differentiation between the functions of the Boards of Agriculture and Education (*Acland*) 2673-4, 2681-3, 2707; (*Turnor*) 14268-74, 14475-8.
- Difficulty arising from dual control (*D. T. Cowan*) 5207, 5239-44.
- Does not, of course, question that Departments of State other than the Board of Education are able to conduct educational work efficiently (*Ogilvie*) 16077-84.
- Farmers are more in sympathy with the Board of Agriculture than with the Board of Education (*Eve*) 13005; (*Nicholas*) 1006-7.
- Great advantage if county officials had to deal with only one central authority (*Howard*) 7007-8.
- In no section of technical instruction other than agriculture does any Department but the Board of Education deal with local authorities or managers of institutions in matters of education in relation to Government grants (*Ogilvie*) 15713.
- Need for co-operation between Boards of Agriculture and Education (*Acland*) 2812; (*Hall*) 1574-80.
- Refers to lack of, and urges necessity for, co-operation between Boards of Agriculture and Education (*Hobhouse*) 14926a-34, 14980-6, 15017-20.
- "Relation" between Boards of Agriculture and Education (*Ogilvie*) 16029-41, 16087.
- State must lead and not wait for demand from the localities (*Brooke-Hunt*) 15689.
- Suggests a joint committee between Boards of Agriculture and Education (*Hobhouse*) 14934-6.
- Wherever there have been two departments responsible for the control of education there have been difficulties and overlapping (*Turnor*) 14264-7.
- Which Government Department should be responsible for instruction bearing on agriculture in elementary schools (*Campbell*) 11181b, 11391-401.
- Would prefer that the Board of Agriculture retained the control of higher agricultural education (*Hall*) 1556-9; (*Phipps*) 9118, 9189-92; (*Sutton*) 4091.

Board of Agriculture and Fisheries :

- Appreciation of the interest which the, have shown in meteorology (*Mill*) 6328-9.
- Assistance to County Councils has been most valuable (*Eve*) 12999-3002, 13153.
- Assists and advises the County Councils (*Brooke-Hunt*) 15573-7.

Organisation and Control of Agricultural Education—cont.**Board of Agriculture and Fisheries—cont.**

- Great benefit to agriculture if the sympathy which exists between the, and the practical agriculturist were extended (*Grant*) 10419.
- Have endeavoured to organise higher agricultural education but have not had the funds to deal with all grades (*Brooke-Hunt*) 15584-6, 15666.
- Have not allowed institutions to spring up at random (*Brooke-Hunt*) 15588-9.
- Have not encouraged institutions to foster and develop native breeds of stock (*Winter*) 6659i.
- Should advise counties as to types of institutions (*Hall*) 1498-9, 1520-5.
- Should have more power of control over agricultural education (*Eve*) 13121-2, 13171-13174.
- Should take a more active part in assisting the establishment of first-class institutions and advising county authorities (*Hobhouse*) 14937-14941, 14949.
- Suggests that the relations between the, and the colleges could be made closer, e.g., Board might publish the results of their experiments (*Rogers*) 15277-93, 15298-306, 15321-3, 15335-45.
- Would like to see the, take up boys when they leave the elementary school (*Wheeler*) 6442.

Board of Education :

- Attitude of, towards agricultural education (*Phipps*) 9118, 9189-92.
- Have recently done a great deal to assist agricultural education (*J. A. Smith*) 14532.
- Making of grants in respect of further education of people already engaged in agricultural occupations is an essential part of the general work of the Department (*Ogilvie*) 15833-40.
- Suggest that the Board of Agriculture might co-operate with and assist the, as regards school gardens and the training of elementary school teachers (*Brooke-Hunt*) 15644-8, 15655-7.

Institutions, Agricultural :

- As to making, responsible for the agricultural education of the affiliated counties (*Dugdale*) 4963.
- Danger of overlapping between (*Winter*) 6878-9, 6889-91.
- If the courses at, are too long, the education is restricted to a few instead of being general (*Kidner*) 6053-5, 6078, 6086.
- Origin of the collegiate centres (*Brooke-Hunt*) 15527 ; (*Craigie*) 13177c.
- Owe their initiation to local desire and local effort, assisted and stimulated by the Board of Agriculture (*Brooke-Hunt*) 15536, 15561.
- Prefer to strengthen existing dairy institutions rather than to establish additional ones (*Ashcroft*) 2441-2.
- Staff working in the counties should be attached to collegiate centre (*Hall*) 1599-600.
- There should be attached to central institution one man, with county for unit, whose sole duty it would be to advise and assist farmers (*Eve*) 12993, 13008, 13051-7, 13096-100.
- Type of institution should be influenced by local conditions (*Hall*) 1498-9, 1538.
- Work of, should be allowed to expand (*Brooke-Hunt*) 15688-9.
- Would like to see in each county an agricultural official attached to the central institution (*Davies*) 8284-6, 8394-6.

Most Suitable Unit for purposes of Agricultural Education :

- County unit (*Brockholes*) 13736 ; (*Craigie*) 13186 ; (*Phipps*) 9077-81 ; (*Wheeler*) 6443.
- Grouping of counties (*Dunn*) 11997-12006 ; (*Eve*) 13148-54 ; (*Simmons*) 8703-5.
- National basis (*Brooke-Hunt*) 15566-70 ; (*Craigie*) 13184-6 ; (*Grant*) 10418-23 ; (*MacDonald*) 11780-3 ; (*Roberts*) 8125-6 ; (*Stiby*) 12596-601 ; (*Swanwick*) 7662-5 ; (*Winter*) 6708-12.

Permanent Consultative Committee, suggestion for appointing a, in connection with the Board of Agriculture and Fisheries :

- Danger of over-centralisation if the Committee attempted to deal with research (*Lodge*) 5515-7.

Organisation and Control of Agricultural Education—cont.**Permanent Consultative Committee—cont.**

- Functions of such a committee (*Acland*) 2751-4, 2791, 2830.
- Larger agricultural societies should be able to furnish whatever a consultative committee could furnish (*Acland*) 2677-9, 2715-6.
- Members from the North of England would probably attend regularly, provided the meetings were not held too frequently (*Gilchrist*) 606, 689.
- Might be a good thing, but would prefer leaving work to the Board of Agriculture (*Dugdale*) 4964-5, 4972, 5009.
- Might be desirable, but committee should have power of allocating increased grants (*J. W. Smith*) 12282-3, 12301-7.
- Might be of value as a channel of information (*Craigie*) 13195-9, 13202-4.
- More effective than present system of Honorary Agricultural Correspondents (*Winter*) 6806.
- Not worth while setting up such a committee unless there were more funds to distribute (*Hobhouse*) 15029-32.
- Prepared to trust the Board of Agriculture without the assistance of a committee, and unless such a committee would be instrumental in obtaining additional grants cannot see that it would be of much use (*Eve*) 13001-4, 13123, 13161-4.
- Should not be responsible for administration (*Acland*) 2741-3.
- Useful, if it had a sum of money with which to assist research (*Hall*) 1606-7.
- Very valuable if it enabled more financial assistance to be given to agricultural education, but its success would very largely depend on its constitution and functions (*Bickersteth*) 2959-60, 3092-5.
- Would be useful (*Amos*) 948 ; (*Carrick*) 503 ; (*Dunn*) 12008-13 ; (*Gilchrist*) 605 ; (*Percival*) 4357-61 ; see also (*Phipps*) 9193-4.

OXFORD, UNIVERSITY OF.

Evidence received principally from (*Warren*) 5411-5471 ; (*Somerville*) 15042-15115.

Forestry School (*Somerville*) 15103-4, 15042c ; (*Warren*) 5411b, 5412-4.

History of the Sibthorpe Professorship (*Somerville*) 15042a ; (*Warren*) 5411a.

Reading University College, for present relations with, see under Reading.

Department of Agriculture, as to the formation of and possible scope of work of the proposed (*Somerville*) 15042b-d, 15042g, 15070-3, 15078-15082, 15098-100 ; (*Warren*) 5411, 5411c, e, 5415-7, 5462-3.

Desirous of seeing such a department formed (*Sutton*) 4092-9.

Financial prospects (*Somerville*) 15042f, 15093-4 ; (*Warren*) 5411d, 5447, 5454-61.

Proposed courses of instruction (*Somerville*) 15042d, 15048-54, 15083-9 ; (*Warren*) 5415, 5420-8.

Provision for instruction in allied sciences (*Warren*) 5418, 5445-6.

Reading University College, instruction given at Oxford would not interfere with (*Percival*) 4319-21 ; (*Somerville*) 15042e, g ; (*Warren*) 5411f.

Research work, prospect of, being conducted (*Somerville*) 15046-7, 15071 ; (*Warren*) 5451.

Students :

Cost to (*Somerville*) 15060-8 ; (*Warren*) 5437, 5452-3.

Length of residence necessary for a degree (*Somerville*) 15095-7, 15102 ; (*Warren*) 5464-71.

Probable number of (*Warren*) 5447-50.

Probable type of (*Somerville*) 15043-5, 15048-15051, 15074-7, 15110-5 ; (*Warren*) 5412-4, 5419-22, 5428-37, 5441-4.

PEET, Mr. J. O., B.Sc. *Organiser of Agricultural Education and Lecturer in Agriculture to the Herefordshire County Council.* (Qualifications of witness, see 12308-14, 12377-8, 12401.)

Evidence, 12308-12511.

PENNANT, Mr. P. P., M.A. *Member of the Council of the University College of North Wales, Bangor.*

Evidence, 6480-6649.

PERMANENT CONSULTATIVE COMMITTEE OF THE BOARD OF AGRICULTURE. *See under Organisation.*

PERCIVAL, Mr. J., M.A. *Director of the Agricultural Department of the University College, Reading.*

Evidence, 4107-4236, 4265-4384.

PETER, Mr. J. *Steward and Land Agent to Lord Fitzhardinge at Berkeley Castle.*

Evidence, 9755-9889.

PHIPPS, Mr. C. N. P. *Chairman of the Wiltshire Agricultural Education Committee.*

Evidence, 8980-9205.

PORTER, Mr. ED., B.Sc. *Secretary of Agriculture for the Lancashire County Council. (Qualifications of witness, see 13506-9, 13558-9, 13650-5; and also (Brockholes) 13694.)*

Evidence, 13505-13659, 13747-55, 13764-9.

POULTRY-KEEPING. *See under Subjects of Instruction.*

PREVIOUS EDUCATION—Education of Agriculturists previous to attending an Agricultural Institution.

General level of trained intelligence of students coming to agricultural college is not as high as one might expect (*Keeble*) 4241b, 4242-4.

Importance of provision being made to allow boys in rural districts to continue their education after leaving the elementary school (*Peter*) 9759g, 9760-9782, 9839-55, 9863-71.

Just as much scientific training can be imparted by taking subjects which come under the head of agriculture as by taking subjects that come under any other head (*Hogben*) 14053.

Lads who are going to become farmers should leave school not later than 16 and go on the land (*J. W. Smith*) 12213-4, 12248-50.

Necessary that agriculture or nature-study should receive a definite place in the school curriculum beginning from the elementary school (*Bradley*) 8758b-66, 8843-9.

Should be *general* not specialised towards agriculture (*Acland*) 2643-6, 2693-6, 2781, 2890-1, 2901-10; (*Bickersteth*) 2938a, 2980-1, 3250-2, 3284-6; (*Dugdale*) 5020-2; (*Fisher*) 3008-11, 3031, 3034-5; (*Foulkes*) 5764-5; (*Percival*) 4135-6; (*Seton*) 3049b, 3050-2; (*J. W. Smith*) 12207-12; (*Smith-Hill*) 7458-64; (*Solomon*) 11544-7; (*Winter*) 6674-5.

Continuation Classes :

Agriculture cannot be taught at (*Acland*) 2650a; see also (*Davies*) 8290-3.

Importance of providing (*Wheeler*) 6421-2.

Instruction given by means of classes meeting two or three times weekly in day or evening throughout the session (*Ogilvie*) 15690m.

Suggests giving instruction in dairying, bee-keeping and poultry-keeping at evening and Saturday classes (*Dugdale*) 4882-90, 4972-7.

Value of (*Acland*) 2650-3.

Elementary :

Boys should be allowed during the last year at school to study text-books bearing on their future occupation (*Wilks*) 13954.

Disadvantage of pupils leaving school at a comparatively early age (*Ogilvie*) 15690j.

Does not develop the powers of observation (*Goaring*) 11054.

Framed too much on urban lines (*Brockholes*) 13717.

Function of an elementary school (*Ogilvie*) 15690b.

Importance of including practical instruction (*Lanbridge*) 10980-1004.

Instruction in rural schools should lean towards the country rather than the town (*Brockholes*) 13717-21; (*Chris. Middleton*) 12845; (*J. W. Smith*) 12220-31, 12265-9; (*Turnor*) 14235, 14345-6, 14392, 14430-2, 14452-5.

Previous Education—cont.

Elementary—cont.

Meteorology, whether instruction in, could be given in elementary schools (*Mill*) 6352-4.

Provision of higher elementary schools and upper classes in elementary schools (*Ogilvie*) 15690e.

Some of the boys who come from elementary schools cannot even sign their own names (*Wheeler*) 6473.

Special instruction in rural elementary schools (*Ogilvie*) 15690c-d, 16063-9.

Suggests that dairy and poultry instruction should be given to girls from the elementary school during school hours as is done in Monmouth (*Grant*) 10309-21, 10471-8.

Teaching of "agriculture" in elementary schools (*Ogilvie*) 15896-917, 16060-4.

Villages should be grouped for purposes of education and the central school made an improvement on present village school (*Household*) 8087-90.

Which Government Department should be responsible for instruction bearing on agriculture in elementary schools (*Campbell*) 11181b, 11391-401.

Nature Study :

Advantage of (*Turnor*) 14234-7.

Approves of (*Sapwell*) 260-2.

Inspectors could give more encouragement to the teaching of (*Dugdale*) 4881, 4995.

Is apt to cause children to destroy plants, butterflies, &c. (*Wilks*) 13952, 13955-7, 13962-72.

Not altogether in favour of (*Drewitt*) 12138-50.

Pupils take more interest in, than almost any other part of school work (*Roberts*) 8119b.

Unless teacher is well trained, may degenerate into mere text-book work (*Campbell*) 11198-

• 11201, 11389-90.

Of Student attending :

Aberystwyth, University College of Wales (*Davies*) 8328-31; (*Dugdale*) 4962.

Armstrong College (*Carrick*) 329-34, 343; (*Gilchrist*) 539-49, 675-9.

Bangor, University College of North Wales (*Dugdale*) 4962; (*Winter*) 6782-8.

Cambridge, University of (*Wood*) 10-15, 115-21.

Harper-Adams Agricultural College (*Burne*) 5556-5558, 5616-8, 5623-5, 5651; (*Foulkes*) 5694-7, 5813-6, 5882-8.

Harris Institute (*Hale*) 13266-9, 13470-6.

Holmes Chapel (*Young*) 1292-3, 1295-9, 1415-8, 1423-4.

Leeds, University of (*Bickersteth*) 2938-9; (*Seton*) 3049a.

Reading University College (*Childs*) 3867; (*Percival*) 4350-3.

Ridgmont Agricultural Institute (*Druce*) 3602-6, 3730-5.

Studley Horticultural College (*Faithfull*) 5310-3.

Uckfield Agricultural and Horticultural College (*Woodhead*) 2195-9, 2211-9.

School Gardens :

Approve of (*Dunstan*) 1871-3; (*Howard*) 7002; (*Stiby*) 12616-27, 12757-60.

Doing good national work (*Brooke-Hunt*) 15644.

Doubtful as to the value of (*Kidner*) 6026-7, 6043-5.

Great deal of good has been done by (*Wilks*) 13948-50.

Ideal school garden is one which gives each child a small piece to grow his vegetables, and also includes a large piece to teach the management of fruit (*W. P. Wright*) 10232-9.

Individual plot system compared with collective plot system (*Ward*) 4320-1.

Need to be managed on very practical lines (*Brooke-Hunt*) 15644-5.

Not always possible to have, even in country districts (*Wilks*) 13950-1; see (*Ward*) 4619.

Parents in some country parishes dislike school gardens (*Acland*) 2657a, 2845-6; (*Bickersteth*) 3209.

Principal defect at present time is the lack of continuation school gardens (*W. P. Wright*) 10150, 10212, 10231, 10251.

Should be extended (*Hobhouse*) 14967-8.

Should be inspected by experts—practical men (*W. P. Wright*) 10143-5, 10231.

Previous Education—cont.**School Gardens—cont.**

- Suggests that the principal of co-operation might be taught by means of groups of (*Bradley*) 8769-70, 8782.
 Value of (*Acland*) 2657; (*W. P. Wright*) 10232, 10245-50.
 Would like to see a garden attached to every rural school (*Langridge*) 10983-99; (*Sapwell*) 261.

Secondary :

- Doubts whether secondary education is necessary for future farmer (*Simmons*) 8622-5.
 Experiment of instruction in rural science being given in secondary school by county agricultural instructor, *see under* Gloucestershire.
 Farmers' sons who go to an intermediate after leaving an elementary school do not return to farming (*Grant*) 10445-6, 10469-72.
 Higher elementary schools, *see under* Elementary above.
 Influence of secondary education on agricultural education (*Acland*) 2885-9; (*Childs*) 3933-5; (*Hacking*) 6939b-e; (*Phipps*) 9105-110; (*Roberts*) 8163, 8186.
 Need of scholarships tenable at secondary schools (*Goaring*) 11054-62.
 Ordinary grammar school education is not suitable for future agriculturists (*Hale*) 13266-9, 13272-13276, 13470-6.
 Poor farmers prefer to have the advantage of their sons' labour than to send them to a secondary school (*Bickersteth*) 2939.

Character of the Education at Secondary Schools :

- Advocates practical training for future agriculturists rather than the ordinary secondary education (*Cockburn*) 10557-66, 10569-70.
 Agricultural sides to secondary schools :
 Approve of (*Kidner*) 6023-5, 6139-43, 6149-51; (*Stiby*) 12535-52, 12638-9, 12643-53.
 Have not usually been successful (*Dunstan*) 1890-1.
 Not approve of (*Eve*) 13058, 13147; (*Sapwell*) 245-6, 266-71, 333-4.
 Not practicable (*Gilchrist*) 546-7, *see also* 548-9, 679-81.
 Agriculture quite out of place in secondary schools (*Hall*) 1512-3, 1608-10.
 Aim and course of instruction in secondary schools (*Ogilvie*) 15690f-h.
 Approves of specialisation if the general education is not neglected (*Gilchrist*) 730-1.
 Education should be general, but there should be small plots of land attached to the school (*Goaring*) 11082.
 Farmers' sons would more largely attend secondary schools if the education was more practical (*Turnor*) 14333-4.
 Instruction in agriculture in a grammar school might be mischievous (*Childs*) 3952-4.
 Local conditions should determine the precise manner in which agricultural teaching should be limited in intermediate education (*Ogilvie*) 15918-23.
 Not desirable in rural district to carry out purely secondary curriculum (*Hacking*) 6910a.
 Rural schools should have a rural bias (*Hobhouse*) 14856-63; (*Turnor*) 14238-46, 14347-9, 14383-5, 14456-61.
 Should teach pure science subjects, but not agricultural science (*W. T. Lawrence*) 7264; (*Peet*) 12457-61, 12492-3; (*Smith-Hill*) 7461-4.
 Specialized courses in secondary schools (*Ogilvie*) 15690g-h.

READING, BRITISH DAIRY INSTITUTE. *See* British Dairy Institute, Reading.**READING, UNIVERSITY COLLEGE.**

- Evidence received principally from (*Childs*) 3811-3922, 3929-4014; (*F. H. Wright*) 3923-3928; (*Sutton*) 4015-4106; (*Percival*) 4107-4236, 4265-4384; (*Keeble*) 4237-4264, 4385-4450.
 Advice given to agriculturists (*Keeble*) 4414-20, 4448-4450.
 Analyses for farmers (*Percival*) 4228-9.

Reading, University College—cont.

- Assistance given to students after completion of course (*Miller*) 9610-4.
 British Dairy Institute, relations with, *see under* British Dairy Institute.
 Directions in which work could be developed (*Percival*) 4230.
 Governing Body (*Childs*) 3812, 3812d, 3814-26, 3912-3.
 History of the formation of the Agricultural and Horticultural Departments (*Brown*) 6155d, g; (*Childs*) 3812-3.
 Legal status of the College (*Childs*) 3874-6.
 London University, relations with (*Childs*) 4008-14.
 Oxford University, relations with (*Childs*) 3812d, 3824-5, 3892-6, 4007; (*Somerville*) 15069.
 For information as to the effect on College at Reading of the formation of an agricultural department within the University of Oxford, *see under* Oxford University.
 Relations with supporting counties (*Childs*) 3973-87; (*Percival*) 4107b, 4331-43.
 Attitude of the county councils towards (*Sutton*) 4037, 4054-8.
See also under Berkshire and Dorset.
 Sphere of influence (*Childs*) 3850-1.
 Attitude of Agriculturists towards, *see that title*.
 Courses of Instruction (*Childs*) 3833-41.
 Agriculture (*Brown*) 6228, 6283, 6286-8; (*Percival*) 4127-8, 4131-3, 4161-5, 4354-6.
 Elementary School Teachers, *see that title*.
 Horticulture (*Keeble*) 4263, 4400, 4434-40.
 Poultry-keeping (*Brown*) 6155e, j, 6193-9, 6225-7, 6259-62, 6286-91.
 External Work :
 Experiments (*Keeble*) 4412-3; (*Percival*) 4107, 4126, 4231-5, 4291-5, 4304.
 As to whether sugarbeet is a crop that could be profitably grown in this country (*Percival*) 4119-26, 4194-7, 4276-81, 4285-4289.
 Lectures (*Keeble*) 4245-7, 4444-7; (*Percival*) 4115-6, 4118, 4153-60, 4176-83, 4226-7; (*Simmons*) 8605, 8655-6; (*Sutton*) 4024.
 Finance :
 Almost impossible to give a correct account of annual cost of instruction in agriculture and horticulture as apart from other instruction (*Childs*) 3905-22, 3956-74; (*F. H. Wright*) 3923-8; *see also* (*Ogilvie*) 16033, 16036-9.
 Amount of capital expenditure (*Childs*) 3852a.
 College endowment (*Childs*) 3877-80.
 County councils, although quite favourable to the College, are unable to give larger grants (*Sutton*) 4036-41.
 Have not the power to increase largely their grants (*Childs*) 3852f, 3905, 3936-9, 3942-7, 3956-7.
 Expenditure is justified although the number of students is not great (*Childs*) 3929-32; (*Percival*) 4328.
 Financial arrangements as regards poultry instruction (*Brown*) 6155f.
 Grant from Board of Agriculture, inadequate (*Childs*) 3852c.
 Receipts from fees (*Percival*) 4364-6.
 Sources of income (*Childs*) 3851.
 Without private generosity agricultural education could not have been carried on at the College (*Childs*) 3852b.
 Farm and Fruit Station at Shinfield (*Brown*) 6245-6; (*Childs*) 3813b; (*Keeble*) 4396-9, 4421-4; (*Percival*) 4185-90, 4266-75, 4282-4.
 Improvement in the quality of milk (*Percival*) 4269-72, 4290.
 Horticultural Department :
 Board of Agriculture refused special grant for (*Childs*) 3852g.
 First institution in the country for men (*Keeble*) 4239.
 Has done most admirable work (*Brooke-Hunt*) 15659b.
 Scholarships for bona fide gardeners founded, but after a few years abandoned (*Keeble*) 4241a, 4244-5.
 Suitability of instruction for Colonial students (*Keeble*) 4385-95; (*Sutton*) 4042-6.
 Work curtailed through lack of funds (*Keeble*) 4415, 4419, 4432-3.

Reading, University College—cont.

Poultry Farm at Theale, equipment, financial position, &c. (*Brown*) 6155i, 6171e, f, 6263-6; (*Childs*) 3813c, 3842-6.

Research Work (*Brown*) 6164a, 6165a, 6200-3, 6263; (*Keeble*) 4239b, 4240-1, 4413, 4432.

Scholarships tenable at (*Percival*) 4322-7, 4375-80. Need for more and value of same (*Percival*) 4203, 4207-9.

Staff (*Childs*) 3896-8; (*Percival*) 4226-7.

Inadequate (*Childs*) 3852d, 3853-4.

Insufficient to carry on research and much external work (*Sutton*) 4029-30.

Students :

Fees (*Brown*) 6228-9; (*Childs*) 3812b; (*Keeble*) 4251-3; (*Percival*) 4204-6.

Higher, charged to students from outside counties (*Childs*) 3851b.

Have not in the past been received from Oxford University (*Somerville*) 15042e, 15056-9, 15090-15092.

Number of (*Childs*) 3849, 3987-91; (*Percival*) 4322, 4328, 4330.

Previous education of, *see that title*.

Residential accommodation (*Brown*) 6181; (*Childs*) 3812a, 3859-62; (*Percival*) 4316-8.

Type of student and their after-careers (*Childs*) 3849, 3863-5, 3867, 3881, 3899-904, 3955.

Agricultural (*Childs*) 3849a; (*Percival*) 4145-4152, 4215-8, 4222-5, 4317-8; (*Sutton*) 4047-8, 4053.

Horticultural (*Childs*) 3849a; (*Keeble*) 4239a, 4241b, 4242-4, 4248-51, 4388, 4401-10, 4425-30; (*Miller*) 9591-4.

Poultry-keeping (*Brown*) 6155k, 6156-64, 6174-81, 6243-4, 6271-2; (*Childs*) 3849c.

REID, Mr. W. F., F.C.S., F.I.C. *Representative of the British Bee-Keepers' Association.* (Qualifications of witness, *see* 14583-7, 14594, 14631, 14637.)

Evidence, 14583-14722.

RESEARCH.

"Journal of Agricultural Science" (*T. H. Middleton*) 15460b.

Legislation should follow on lines indicated by scientific investigation (*J. A. Smith*) 14542-3.

Control of :

Better left to the individual and not controlled by central body (*Beaven*) 14173-8; (*Dunstan*) 1941-6.

To be deprecated (*Winter*) 6663b, 6664-8.

Value of a committee formed for purpose of collating research work (*Hall*) 1606-7.

Encouragement by the State.

Duty of the State to provide for research and investigation because of their importance to all grades of education (*Roberts*) 8171-4.

Method of allocating grants for research (*Dunstan*) 874.

State should give greater support to research (*Acland*) 2665-6, 2684-92, 2734-5; (*Cave*) 9574, 9584; (*Craigie*) 13187; (*J. A. Smith*) 14532-3; (*Wilks*) 13943-7.

Importance and Appreciation of :

Agriculture to-day would be absolutely impossible without research (*Eve*) 12989-90.

Demand for research from farmers and others (*Beaven*) 14190-200.

Farmers generally do not admit the value of research because there has been no means of widely diffusing information thus obtained (*Eve*) 12990-3.

Illustration showing good results that have followed from research (*Beaven*) 14134-41.

Intensely necessary (*Wilks*) 13943-7.

Is indispensable (*Wood*) 203.

Is valued by farmers, but the average farmer thinks a great deal of practice and little of science (*Pennant*) 6600-2.

Research is necessary before the material with which to instruct the intelligent agriculturist is available (*Beaven*) 14179-89.

Very difficult, very tedious, but very necessary (*Beaven*) 14165-6.

Research—cont.**The need for further research.**

Further research necessary (*Beaven*) 14136-7, 14184, 14186-9, 14194; (*Benson*) 2548-52, 2584-93; (*Brown*) 6278-81; (*Cave*) 9574-84; (*Lodge*) 5476-81; (*Mill*) 6329-32; (*Reid*) 14630-14637; (*J. A. Smith*) 14535a-7.

Immense amount of profitable research work to be done, and this should receive greater financial assistance from the State (*Humphries*) 13834-5, 13838a-47, 13849-59, 13867-8, 13886-97.

This country is behind Continental countries as regards research (*Campbell*) 11226-7.

Where, and by whom, research should be conducted.

Advocates more encouragement and facilities for pursuit of research at colleges (*Voelcker*) 13993.

Time available for research at agricultural colleges is practically nil (*Keeble*) 4413.

Agricultural societies should be encouraged to conduct research (*Acland*) 2684a, 2734-5.

Essential that a first-class college should undertake research work (*Campbell*) 11409-10; (*Dunstan*) 848, 873, 1889; (*Wood*) 89-91, 203-5.

Insufficient provision of institutions at which research could be conducted (*Beaven*) 14142-51, 14159, 14203-4.

Relationship between education and research (*Acland*) 2688-90, 2860-6, 2913-5; (*Bickersteth*) 2990-2; (*Brown*) 6182-4; (*MacDonald*) 11809, 11860-5.

Teachers at educational centres have every opportunity of becoming familiar with the needs of the district and are, therefore, more likely to initiate useful research (*Winter*) 6663b, 6670-1.

Unreasonable to expect men engaged in teaching, especially the less advanced work, to undertake research; research can only properly be conducted by people who devote their whole time to it (*Humphries*) 13835a-8, 13848, 13869-78, 13899-901.

With regard to veterinary science, research could be undertaken both at the Royal Veterinary College and certain agricultural colleges (*Cave*) 9574-84.

Would prefer to see research centralised rather than diffused (*Humphries*) 13882-5.

RIDGMONT AGRICULTURAL INSTITUTE, BEDFORDSHIRE.

Evidence received principally from (*Inskip*) 3301-3493; (*Druce*) 3494-3810.

Attitude of Bedford County Council towards, *see below under Finance, Receipts from County Council.*

Building accommodation (*Druce*) 3738-42.

No laboratory or accommodation for doing scientific work (*Druce*) 3570-2.

Cambridge University, relations with (*Druce*) 3757-3763; (*Eve*) 13155-8.

Directions in which work should be developed (*Druce*) 3514-8, 3570, 3641-2, 3743-56.

Governing Body (*Inskip*) 3302-3, 3306a, 3349-64.

History of the formation of the farm school and of the re-construction (*Eve*) 13022a, 13058; (*Inskip*) 3306, 3310-1.

The attempt to teach labourers was started under unfavourable circumstances (*Brooke-Hunt*) 15609-10.

Since the re-construction, the Institute has done excellent work (*Eve*) 13022a.

Attitude of Agriculturists towards, *see that title.*

Courses of Instruction (*Druce*) 3495, 3510-8, 3521-5, 3568, 3607-11, 3675-84; (*Inskip*) 3306b, 3387-93, 3409-17, 3471-3.

Elementary school teachers, *see that title.*

Farm (*Inskip*) 3369-77, 3437-45.

External Work :

Experiments (*Druce*) 3561-3, 3685; (*Inskip*) 3341-4.

Lectures (*Druce*) 3564-7, 3312-3; (*Inskip*) 3459-3462, 3469-70.

Local classes in manual processes and horse-shoeing (*Druce*) 3573-8, 3688-93, 3723-5; (*Inskip*) 3314-24, 3419-27.

Ridgmont Agricultural Institute—cont.**Finance :**

- Financial arrangements (*Inskip*) 3360-5, 3436-8.
 Grants from Board of Agriculture (*Inskip*) 3395, 3453.
 Need of scholarships to enable students to go from Ridgmont elsewhere to receive further instruction (*Druce*) 3533-4, 3612-4, 3618-20 ; (*Inskip*) 3398-9.
 Receipts from County Council (*Druce*) 3625-7 ; (*Inskip*) 3325-40a, 3357-9, 3366-8, 3374, 3394, 3438, 3448-53, 3489-93.
 Sources of income (*Inskip*) 3304-5, 3486-9.
 Work curtailed through want of funds (*Druce*) 3579.

Scholarships tenable at (*Druce*) 3498.

Staff (*Druce*) 3596-600, 3717-22, 3774-9.

Students :

- Fees (*Druce*) 3498-504 ; (*Inskip*) 3306b, 3308-9.
 Higher, charged to students from outside the supporting counties (*Inskip*) 3306b, 3307-9.
 Number of (*Druce*) 3496-7, 3526 ; (*Inskip*) 3384-6.
 Previous education of, *see that title*.
 Residential accommodation (*Druce*) 3726-9, 3738, 3740.
 Type of student and their after-careers (*Druce*) 3497, 3505-6, 3519-20, 3526-9, 3615-7, 3672-4 ; (*Eve*) 13064 ; (*Inskip*) 3310, 3346, 3396-9, 3467-8.

ROBERTS, Mr. T. F., LL.D. *Principal of the University College of Wales, Aberystwyth.* (Qualifications of witness, *see* 8103-4, 8107-9.)

Evidence, 8102-8248.

ROGERS, Mr. A. G. L. *Head of the Intelligence Branch of the Board of Agriculture and Fisheries.* (Qualifications of witness, *see* 15116, 15332, 15363-6, 15436.)

Evidence, 15116-15436.

ROYAL AGRICULTURAL COLLEGE, CIRENCESTER.

Evidence received principally from (M'Clellan) 9890-10112.

- Analyses for farmers (*Swanwick*) 7634a, 7684-5.
 Board of Agriculture, relations with (*M'Clellan*) 9995-9997, 10075-7.
 Buildings and equipment (*M'Clellan*) 9946, 10036-8, 10069-73.
 Doing excellent work (*Langridge*) 10918-21, 10938, 11016-22.
 Future of the College if it became a public institution (*M'Clellan*) 10081, 10084-92, 10098-112 ; *see also under* Bristol University College.
 Governing Body (*M'Clellan*) 10021-8.
 History of the establishment of (*M'Clellan*) 9895, 9970-4.
 Question of the possible affiliation to Oxford University (*M'Clellan*) 10085, 10109 ; (*Somerville*) 15097.
 Well qualified to become collegiate centre for Gloucester (*McCracken*) 9339-41.

Attitude of Agriculturists towards, *see that title*.

Courses of Instruction (*M'Clellan*) 9913-5, 9934-7, 9976-81, 10000-5, 10029-35.
 Curriculum is over-crowded ; too ambitious (*Swanwick*) 7637-9, 7750-7.
 Curriculum is suitable for those who attend (*McCracken*) 9266-8.
See also under Forestry below.

Farm and Garden (*M'Clellan*) 9953-69, 9975, 10001-10005, 10019, 10093-7 ; (*Swanwick*) 7725-7.
 Experiments (*M'Clellan*) 9993-4, 9998-9, 10039-10046 ; (*Swanwick*) 7594, 7634-6, 7692.
 Time spent by student on the (*M'Clellan*) 9959-63, 9966-75.

Finance :

- Legal status and information as to bonds, leases, &c. (*M'Clellan*) 9895-912, 9946-58, 10062-9, 10078-80.
 Without assistance from public funds, partly in order to reduce present high fees, the number of students will continue to decrease, and the College cannot be carried on much longer (*M'Clellan*) 10046-61, 10074-7, 10081-4, 10086-10092, 10098-107.

Royal Agricultural College—cont.

Forestry (*M'Clellan*) 9914a, 10002-15.

College has great opportunities for instruction in (*McCracken*) 9269.

Staff (*M'Clellan*) 9976, 9983-92, 10018, 10069-70 ; (*Swanwick*) 7634b.

Students :

- Fees (*M'Clellan*) 9919, 10051-3, 10056.
 Number of (*M'Clellan*) 9920-4, 10057-8, 10085.
 Residential accommodation (*M'Clellan*) 9916-8.
 Type of student and their after-careers (*Kidner*) 6105-6 ; (*M'Clellan*) 9925-33, 9938-45, 10060-10061 ; (*Swanwick*) 7640-1.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Evidence received from (Dugdale) 4868-5033, representing the Society.

- Amount contributed by the Society towards agricultural education (*Dugdale*) 4949-55.
 National Diploma Board, *see under* Examinations.
 Publications of the (*Dugdale*) 4871c, 4923-5, 5000.
 Shows, educational exhibits at (*Dugdale*) 4871d, 4926-7 ; (*Chris. Middleton*) 12883-90, 12898-12908 ; (*Turnor*) 14444-51.
 Farriery competitions at (*Dugdale*) 4928-9.
 System of giving prizes to farmers (*Tinniswood*) 7191a.

ROYAL COLLEGE OF VETERINARY SURGEONS.

(*MacFadyean*) 9682-9.

ROYAL HORTICULTURAL SOCIETY.

Evidence received from (Wilks) 13902-13974, representing the Society.

Conducts examinations for :

- Gardeners in the principles and practice of horticulture (*Wilks*) 13911, 13920, 13927-8.
 Men employed in public parks and gardens (*Wilks*) 13923.
 Teachers connected with elementary and technical schools (*Wilks*) 13921-2.
 An inherent defect in all the examinations of the Society is that the candidates cannot be examined practically (*Wilks*) 13929-31 ; *see (W. P. Wright)* 10273-7.
 Fees charged (*Wilks*) 13924.
 Doing good work in improving practical gardeners (*Wilks*) 13932.
 Financial position (*Wilks*) 13942.
 Research work (*Wilks*) 13940-1, 13974.
 Scholarship awarded annually (*Wilks*) 13939.
 Students taught in the Society's gardens (*Wilks*) 13933-8, 13958-63.
 Used to be associated with the Society of Arts in an examination for gardeners (*Wilks*) 13907-9.

ROYAL METEOROLOGICAL SOCIETY.

Evidence received from (Mill) 6292-6398, representing the Society.

For information as to Meteorology, see Subjects of Instruction.

- Action taken by the Society in connection with the provision of instruction in meteorology at agricultural colleges (*Mill*) 6307-13, 6341-2.
 Financial position (*Mill*) 6362-5.
 Steps taken by the Society to promote interest in, and knowledge of, the science of meteorology (*Mill*) 6293-301, 6325-7, 6357-9.

ROYAL VETERINARY COLLEGE, LONDON.

Evidence received principally from (McFadyean) 9674-9754.

- Has no power to grant a veterinary diploma : this is done by the Royal College of Veterinary Surgeons (*McFadyean*) 9682-9.
 History of the establishment of (*McFadyean*) 9676-81.

Finance :

- Amount of assistance received from the State (*McFadyean*) 9678, 9693, 9731, 9734-43.
 Danger of the work being curtailed through want of funds (*McFadyean*) 9731-3.
 Funds have dwindled until they are on the point of disappearing (*McFadyean*) 9691.
 Need for Government support, *see under* Veterinary Education.
 Royal Agricultural Society gives an annual grant (*McFadyean*) 9707-9.

SAPWELL, B. B. *Member of the Norfolk County Council.*

Evidence, 239-314

SCHOLARSHIPS FOR AGRICULTURAL INSTRUCTION.Advocates system of "open" scholarships (*Hall*) 1500-9, 1539-43, 1616-9.Counties prefer to distribute their own, rather than allow the college to do so (*Davies*) 8389; (*Pennant*) 6577.Many farmers do not know that there are scholarships available (*Chris. Middleton*) 12860, 12870-1.Mistake to make the examination held for the purpose of awarding scholarship too difficult (*Wilkinson*) 11637.More uniformity required as to the length of scholarships awarded by different county councils available at same institution (*J. A. Smith*) 14502a.Need for scholarships to cover cost of six months' training in poultry-keeping (*Brown*) 6171d.Schoolmasters sometimes are averse to giving information about scholarships which would take away his pupils (*Foulkes*) 5908.Suggests that county councils should give scholarships enabling lads to be apprenticed to good practical farmers (*Simmons*) 8626-30, 8674-8, 8711-4.Comment upon (*McCracken*) 9291-9, 9350-3.Will be taken up if the instruction is considered valuable (*Dugdale*) 5013-7.**Amount of Scholarships:**Certain scholarships should, in addition to the payment of fees, provide or partly provide the equivalent of what the holder would otherwise be earning (*McCracken*) 9231-2, 9270, 9274, 9277-9, 9330-2.Should not compensate for loss of holder's wages (*Chris. Middleton*) 12811-2, 12860-2.Should not cover entire cost to holder of maintenance as well as instruction (*Wilkinson*) 11638.**Policy of giving Scholarships** and the type of student to whom they should be given:Danger of instruction not being appreciated when too many scholarships are given (*Winter*) 6868-9.Does not approve of giving higher education free to everyone whether they can benefit or not (*Hale*) 13325-35, 13463-6.Doubtful whether the system is beneficial (*Nicholas*) 964-6.Exceptional lads, scholarships should be available for (*J. W. Smith*) 12216-8; (*Stiby*) 12573-95.Free education is appreciated in New Zealand (*Hogben*) 14111-4.Poverty should not be a qualification (*J. A. Smith*) 14511b, 14534, 14554-66.Prefer to award scholarships without any test or examination (*Davies*) 8381-5.Should only be given to those whose parent's income falls below a certain fixed sum (*Turnor*) 14291.Students with scholarships are not such good workers as those who pay fees (*Young*) 1418, 1421-2, 1435-7.System of scholarships should be developed (*Swanwick*) 7673-5.**SCHOOL GARDENS.** *See under Previous Education.***SCIENCE AND ART DEPARTMENT.** *See under Board of Education.***SCOTLAND, AGRICULTURAL EDUCATION IN.**Evidence received principally from (*MacDonald*) 11758-11914.As to the need for institutions providing less advanced agricultural instruction (*Ogilvie*) 15863-7.Change in the attitude of farmers towards agricultural education (*MacDonald*) 11831-2, 11834.England compares unfavourably with (*Eve*) 13169-70. Farmers in Scotland would welcome a scheme for improving live-stock (*MacDonald*) 11841-50.**Scotland, Agricultural Education in—cont.**Greatest possible advance made in agricultural education in Scotland as a result of the transfer of the agricultural colleges in Scotland to the Scotch Education Department (*Ogilvie*) 15699b, 15854-8, 15999-16006.No organised system for instructing labourers, farmers themselves are able to undertake this (*MacDonald*) 11848-50.Teaching of history (*Ogilvie*) 15870-1.**Agricultural Colleges:**Are now under the Scotch Education Department (*Brooke-Hunt*) 15530.County councils provide about one-half the funds for (*MacDonald*) 11911-2.Grants to (*Ogilvie*) 16006-14.Number of, and scope of their work, &c. (*MacDonald*) 11831, 11833, 11885-95, 11900-2, 11911-2; (*Ogilvie*) 15859-62, 15868-9.Scotch Education Department have been generous to (*MacDonald*) 11793-4.**Students:**Previous education of (*MacDonald*) 11835-11840, 11908-9; (*Ogilvie*) 15863-4.Type of student and their after-careers (*MacDonald*) 11796-9, 11804-8; (*Rogers*) 15431-4.**SEALE-HAYNE BEQUEST.** (*Acland*) 2658-9, 2827; (*Brooke-Hunt*) 15587b.**SECONDARY AGRICULTURAL INSTITUTIONS.** *See under Institutions.***SECONDARY EDUCATION.** *See under Previous Education.***SETON, Prof. R. S., B.Sc.** *Professor of Agriculture, Leeds University.*

Evidence, 3043-3079.

SHEATHER, Mr. CHAS., F.R.C.V.S. *Master of the Worshipful Company of Farriers.*

Evidence, 10759-10892.

SHORT AGRICULTURAL COURSES. *See under Institutions.***SIMMONS, Mr. W. ANKER.** *Member of the Firm of Messrs. Simmons & Sons, Land Agents, &c., Henley-on-Thames, Basingstoke, and Reading. (Qualifications of witness, see 8578-90, 8739.)*

Evidence, 8578-8744.

SMITH, Mr. H. HAMEL. *Lately resident in the West Indies.*

Evidence, 8960-8979.

SMITH, Mr. J. A. *Principal of the Eastern Counties Dairy Institute, Ipswich. (Qualifications of witness, see 14490, 14504-7.)*

Evidence, 14486-14582.

SMITH, Mr. J. W. *Member of the Herefordshire County Council. (Qualifications of witness, see 12175-9, 12291-4.)*

Evidence, 12174-12307.

SMITH-HILL, Mr. J., B.A., B.Sc. *Principal of the Aspatria Agricultural College, Carlisle. (Qualifications of witness, see 7443-4, 7540.)*

Evidence, 7442-7584.

SOLOMON, Mr. F. O. *Headmaster of the Dauntsey Agricultural School, West Lavington, Wilts. (Qualifications of witness, see 11415-6.)*

Evidence, 11415-11555.

SOMERSET.

Evidence received principally from (Kidner) 6011-6151 ; (Hobhouse) 14839-15041.

Agricultural Instruction Committee (Hobhouse) 14866-14874, 14888-90.

As to establishing an agricultural college for (Hobhouse) 14842-5.

Question of co-operating with Cirencester, Bristol or Oxford for purposes of higher agricultural education (Hobhouse) 15033-5.

Attitude of Agriculturists, *see that title*

Cost of Instruction (Hobhouse) 14999.

Dairy School (Hobhouse) 14990.

Experiments (Hobhouse) 14997-8 ; (Kidner) 6034-40, 6125-7.

Experimental farm given up owing to local opposition (Hobhouse) 14891-5, 14900.

Farriery (Kidner) 6047-52.

Lectures (Kidner) 6020-2, 6046-8.

Manual Processes (Hobhouse) 15012-4.

Scholarship (Hobhouse) 14846-56, 14905-9, 14976-9, 15001-4.

Secondary Schools :

At three, in the county education bearing directly on rural subjects is given (Hobhouse) 14860, 15000, 15004 ; (Kidner) 6023-5, 6139-43.

Staff (Kidner) 6046, 6124.

Lack of practical knowledge (Kidner) 6036-40, 6068-72, 6124.

Veterinary Hygiene (Hobhouse) 14963-4.

SOMERVILLE, Prof. WM., D.Sc. *Professor of Rural Economy, University of Oxford, and a Member of the Committee.*

Evidence, 15042-15115.

SOUTH-EASTERN AGRICULTURAL COLLEGE, WYE.

Evidence received principally from (Dunstan) 751-881, 1834-1971 ; (Amos) 882-950.

Advice and information given to farmers (Amos) 910, 916-8 ; (Dunstan) 812-3, 823.

Buildings, cost of, &c. (Dunstan) 752, 756-7, 761-3.

Governing Body (Dunstan) 753-4.

Labourers, instruction for (Dunstan) 1840, 1849-50, 1859-65, 1868-73, 1885-9.

Managed under a scheme of the Charity Commissioners (Dunstan) 752, 855-7, 1933-5.

Publications of the (Dunstan) 851-2.

Attitude of Agriculturists towards, *see that title*.

Courses of Instruction (Dunstan) 769-86, 805-9, 825, 833-4, 840-7, 1840-1, 1845-50 ; (W. P. Wright) 10172.

Elementary School Teachers, *see that title*.

Forestry (Dunstan) 786, 875-8, 1936-40.

Veterinary Hygiene (Cave) 9490-6, 9510-5, 9537-9540, 9545, 9549, 9558.

Correspondence courses (Dunstan) 818-21.

Instruction in horticulture and fruit-growing needs developing (Dunstan) 1834.

Short courses for farmers' sons impossible owing to lack of accommodation (Dunstan) 1881-4.

External Work :

Experiments (Dunstan) 814-7.

Farriery instruction (Dunstan) 811.

Lectures (Cave) 9505 ; (Dunstan) 802-4.

Suggests that fruit stations in connection with the College should be established throughout Kent, because Wye is not easily accessible to the large growers (W. P. Wright) 10176, 10183.

Farms (Dunstan) 787-8, 793, 800-1, 814-5.

Finance :

Annual expenditure (Dunstan) 826.

Capital outlay, *see under Buildings above*.

Debt on College (Dunstan) 765-6, 768, 838-9.

Long struggle against poverty (Hall) 1490.

Sources of income (Dunstan) 827.

Total receipts from the counties (Dunstan) 764.

And from the Board of Agriculture (Dunstan) 765.

South-Eastern Agricultural College, Wye—cont.

Research Work (Cave) 9516-22 ; (Dunstan) 810, 829, 848-52.

Has been hampered through want of funds (Cave) 9584.

Staff (Hall) 1487.

Difficulty of retaining the services of (Hall) 1613-5.

Inadequately paid (Dunstan) 830-2.

Require additional, to allow of visits being paid to farms (Amos) 909-10.

Students :

Fees (Dunstan) 789-90.

Number of (Dunstan) 757, 780-1.

Residential accommodation for (Dunstan) 792-4.

Additional required (Dunstan) 1838-9.

Type of student and their after-careers (Dunstan) 758-60, 790, 795-9, 855, 858-9, 1844, 1918-24 ; (Hall) 1479.

STAFF, AGRICULTURAL, of colleges and county councils.

Demand for :

Great demand for highly-educated scientific agriculturist (Foulkes) 5771-2.

Great opening for trained forestry instructors (McClellan) 10017-8.

Shortage of good agricultural teachers (Peter) 9796-9.

Qualifications of :

Advantage if, could be drawn from the farming class (Fisher) 3013.

At some higher agricultural institutions the staff are not competent (Collinge) 5064a, 5068.

Difficult to get practical men with scientific knowledge (Brockholes) 13691-7, 13785-6.

Everything depends on the instructor (Hale) 13307-8.

If instructor does not possess the confidence of the farmers he is doing more harm than good (Beaven) 14172 ; (Eve) 12979.

Large proportion of teachers and instructors have been brought up on the land (Simmons) 8603-5.

Comment upon (Eve) 12980-2.

Man straight from college is not suitable for county instructor (Eve) 13050-5 ; (Kidner) 6028-9.

Must show farmers they understand the subject from the practical side (Eady) 9362 ; (Eve) 12979 ; (Kidner) 6029, 6058-66, 6069-72.

Some county council instructors have done more harm than good (Turnor) 14394-6.

See also under Lectures—Lecturer.

Salaries of :

Difficulty in retaining services of members of college staff (Blackshaw) 1818-20 ; (Hamel-Smith) 8975-6 ; (Pennant) 6494, 6516, 6524-9.

Low salaries paid at Welsh colleges (Winter) 6661e-3a.

Posts abroad, higher salaries of (Dunstan) 857-61.

Remuneration often inadequate (Burne) 5565-6 ; (Dugdale) 4900.

Salaries offered to county instructors have practically prevented the posts being open to suitable people (Eve) 13101-9.

Stipend remuneration has increased in the last few years (Childs) 3852d.

Training of :

For the training of teachers a fuller course is needed (MacDonald) 11788, 11857-8.

If agricultural education is to be a success, teachers must be well trained (Campbell) 11197a.

Should be taught to teach (Eve) 12982-3.

Should take a more complete course than can be obtained at an agricultural college (Dunstan) 1516-8.

Teachers who deal with practical agriculture are unsatisfactory because they spread their energies over the whole subject, which is too wide for one man (MacDonald) 11852-6, *see also* (T. H. Middleton) 15448e.

Travelling Scholarships :

Value of, and need for (McCracken) 9260-2 ; (Hamel-Smith) 8973, 8977 ; (Winter) 6663d, 6672-3, 6807-9.

STIBY, Mr. C. B. *Alderman of the Dorset County Council.* (Qualifications of witness, *see* 12523, 12607-12609, 12664-9.)
Evidence, 12512-12781.

STUDLEY HORTICULTURAL COLLEGE, WARWICKSHIRE.

Evidence received principally from (Faithfull) 5294-5410.

Application recently made to Board of Education for a scheme for the future regulation of the College (Faithfull) 5332-6, 5387-9, 5405-9.

Exhibits at local shows (Bradley) 8788; (Faithfull) 5390-1.

History of the establishment, and of the transfer from Reading (Dugdale) 4906-8; (Faithfull) 5295.

Supplies a want (Dugdale) 4916.

Courses of Instruction (Bradley) 8802-3; (Dugdale) 4908-14; (Faithfull) 5295b, 5296-302, 5306-10, 5314-5, 5342, 5355-81.

Would be more satisfactory if the students had the management of the farm (Faithfull) 5295a, 5337-42, 5353-5.

Finance :

Butter is made at a loss (Crooke) 4747-51.

Receive no grants from public bodies (Faithfull) 5316-9, 5399-404.

Scholarships tenable at (Faithfull) 5322-3, 5384.

Staff (Faithfull) 5303-5.

Students :

Fees (Faithfull) 5320.

Number of (Crooke) 4694, 4763-7; (Faithfull) 5295b.

Previous education of, *see that title.*

Residential accommodation for (Faithfull) 5320-1.

Type of student and their after-careers (Bradley) 8758b-60, 8838-41, 8854; (Dugdale) 4911, 4915; (Faithfull) 5328-31, 5344, 5382-3, 5396-8.

SUBJECTS OF INSTRUCTION.

For information as to subjects taught at particular institutions, see under the various institutions.

Agricultural History or Economics :

Value of instruction in (Percival) 4165-6; (Wood) 109-13; (Young) 1339-40.

Agriculture :

Farmers have no business to use artificial manures (Eady) 9442-6, 9469-72.

Suggests method by which student while at college would not lose touch with values (McCracken) 9302-10.

Teaching at some institutions is of too local a character (McCracken) 9257-60.

Teaching of practical agriculture has not been altogether satisfactory (MacDonald) 11786, 11851-6.

Live-stock :

Impossible to teach at college the value and weight of stock (Eady) 9410-3.

Management of stock, the teaching of the, is unsatisfactory at agricultural institutions (Druce) 3695-6, 3709-16.

Suggests that students should visit slaughter-houses and receive instruction as to weights and values of live-stock (McCracken) 9235-47, 9280-5, 9311-5.

Valuation of cattle by live weight (Svanwick) 7718-20.

Bee-keeping :

Advantages of keeping bees (T. W. Cowan) 14742; (Reid) 14590-2, 14629, 14666-7, 14691-14694, 14704-6, 14711-5.

Assistance given in foreign countries to instruction in bee-keeping (T. W. Cowan) 14760-3.

Experimental work should be encouraged by the State (T. W. Cowan) 14788-99.

Experts in bee-diseases (T. W. Cowan) 14805-11, 14814-6; (Reid) 14664-5.

Financial results which follow from instruction in (T. W. Cowan) 14767-8.

"Foul-brood" is quite within the power of bee-keepers to control and its presence is an indication of the want of education (Reid) 14656-62.

Subjects of Instruction—cont.

Bee-keeping—cont.

Great increase in the production of honey would result from the further diffusion of information (T. W. Cowan) 14786a-7.

Imports of honey into this country are considerable, all of which could be produced here (T. W. Cowan) 14764-7, 14817-25.

Instruction in, should be encouraged (Brooke-Hunt) 15626.

Instruction is of value (Hobhouse) 14957-62.

Instructors in, are not always competent (Reid) 14622-3, 14682, 14686-7, 14716-21.

Methods and cost of instruction (Reid) 14669-79, 14701-10; *see also under Surrey.*

Quality of honey is improving (Reid) 14617.

State assistance to bee-keeping, *see under* British Beekeepers' Association.

Biology :

Has been neglected in this country (Collinge) 5036, 5045-6, 5068-9.

Book-keeping :

Importance of farmer understanding (Simmons) 8612-5, 8688-90.

Should be especially suited to agriculture (Simmons) 8639-41.

Very essential subject, but should be treated differently to what it is at present (Hall) 1527-8, 1544-6, 1620-7.

Chemistry :

An understanding of, is a necessity to a farmer (Voelcker) 13983-5.

Analyses, *see that title.*

Has been adequately treated in the agricultural colleges (Voelcker) 13980.

Not worth while sending lad to a college to acquire knowledge which he can obtain much better from an analyst for half-a-guinea (Eady) 9360, 9408-9.

Cider-making :

Importance and extent of the cider and cider fruit industry (Barker) 8447-56, 8479, 8484-9.

Dairying :

Amount of produce spoilt by students (Blackshaw) 1695-701; (Ward) 4506-11, 4543-5, 4569-71.

As to the advantage of having a creamery in connection with an institution giving instruction in dairying (Ashcroft) 2429-33, 2457; (Benson) 2521-7, 2594-6.

Butter-judging at shows (Benson) 2575-8.

Comparison between supply of dairy education twenty-five years ago and the present time (Ashcroft) 2338-45, 2436-9, 2443.

Importance of keeping milk records and of the method of milking (Ashcroft) 2484; (Percival) 4265-75; (Turner) 7938-44.

Importance of packing (J. A. Smith) 14575-81.

Increased demand for instruction in (Benson) 2157-20.

Influence that instruction in dairying has had over the attitude of farmers to agricultural education generally, *see under* Attitude of Agriculturists.

Instruction is often of too local a character (McCracken) 9257-60.

Need for further instruction (Ashcroft) 2437-40; (Tinniswood) 7134-40.

Practical work is not a sufficient training; should be followed by theoretical work (Benson) 2561-2.

Sterilising and pasteurising milk, as to the need for instruction in (Ashcroft) 2430-3, 2474-6.

Suggests that it would be better for a county to subsidise competent butter and cheese makers and send pupils to their dairies than to give instruction by means of itinerant instructor (Stiby) 12602-6.

System of travelling teacher should be considerably extended (Brooke-Hunt) 15620; (Dugdale) 4902.

Travelling dairy classes, which were at one time very fully taken up, have since been rather dropped (Brooke-Hunt) 15620.

Whether butter-making can be made profitable (Crooke) 4747-51, 4830-3.

Subjects of Instruction—cont.

Dairying—cont.

Effect of Instruction :

- Audience not always composed of those who would make use of instruction given (*Eady*) 9414-5.
 Farmers have been enabled to meet the requirements of the present day (*Davies*) 8322-5.
 Improvement in butter trade as result of instruction (*Tinniswood*) 7174-81.
 Instruction has been of very real value (*Brooke-Hunt*) 15620-2.
 On prices realised (*Eady*) 9359 ; (*Grant*) 10330-10332 ; (*Hale*) 13319-24, 13352-71, 13453-63 ; (*Phipps*) 9165-8 ; (*Porter*) 13600-4.
 Quality of butter has improved where instruction has been given (*Eady*) 9358-9, 9419.

Drawing :

- Importance of, to agricultural student (*McCracken*) 9248-56.

Farriery :

- Instruction should go on continuously (*Eve*) 13026.
 Provision should be made in every county for instruction in (*Brooke-Hunt*) 15633-7 ; (*Sheather*) 10785-8, 10869-83, 10887-91.
 Teaching of, most expensive (*Sheather*) 10764.
 Veterinary surgeons have been pleased that instruction in, has been provided (*Wheatley*) 12939-41.

Effect of Instruction :

- Art of horse-shoeing has improved in the last 25 or 30 years (*Sheather*) 10777-80, 10823-8, 10861-6.
 Farmers greatly appreciate instruction in (*Acland*) 2756-7 ; (*D. T. Cowan*) 5207a, 5217-8.
 Improvement in horse-shoeing very marked (*Wheatley*) 12921, 12925-6, 12929, 12934-6, 12948.
 In counties where instruction has been given a better knowledge of shoeing is to be observed (*Eve*) 13026-7 ; (*Sheather*) 10792-4.
 Value of instruction (*Hobhouse*) 14965-6 ; (*Simmons*) 8679-81 ; (*Wheatley*) 12944-6, 12948-50.

Methods of Instruction :

- Best results can only be obtained by instructing farriers before they commence work (*Sheather*) 10794-9.
 Can only be taught by manipulation (*Wheatley*) 12914.
 Lectures are not of real benefit to the actual worker (*Sheather*) 10768, 10821-2.
 Question as to how far scientific instruction is suitable for smiths (*Sheather*) 10783-4.
 Various methods of instruction—travelling van, migratory instructor, permanent school, and apprenticeship—compared (*Sheather*) 10794-9, 10806-7, 10817-8.

Students :

- Attitude of smiths towards instruction (*Brooke-Hunt*) 15633 ; (*Sheather*) 10806-7, 10828, 10884-6 ; (*Wheatley*) 12930-2.
 Not necessary for agricultural students to learn farriery (*Mannington*) 2085-91, 2127-9.
 Type of (*Sheather*) 10800-5 ; (*Wheatley*) 12942.

Forestry :

- Importance of instruction in (*Davies*) 8401-4.
 Instruction in, requires developing in the South of England (*Dunstan*) 1936-40.
 Scope for advisory work (*Foulkes*) 5914-7.

Geology :

- Too much time spent on geology of strata as opposed to surface geology (*Swanwick*) 7638-9, 7752-3, 7756-7.

Horticulture :

- Distinctly profitable industry (*Brooke-Hunt*) 15641-3.
 For women, see under Women.
 French system of early vegetable production (*Crooke*) 4694d, 4820-1.
 Instruction in grading and packing (*Faithfull*) 5356-62, 5399-400 ; (*Keeble*) 4400, 4434-40 ; (*Miller*) 9601-9, 9622-3, 9628 ; (*W. P. Wright*) 10172-3, 10261-6.

Subjects of Instruction—cont.

Horticulture—cont.

- Private gardeners as a class have not much scientific knowledge and their general education is often insufficient (*W. P. Wright*) 10151-2, 10156-70, 10213-9, 10252-9, 10278-80.
 Question of giving advice and assistance to owners of private gardens (*Goaring*) 11095-9.

Need for further provision :

- Fruit stations, more, are required in suitable districts (*Brooke-Hunt*) 15653-4 ; (*Goaring*) 11065-7 ; (*W. P. Wright*) 10176, 10183.
 Further funds required to assist instruction in horticulture and the distribution of literature (*W. P. Wright*) 10194-6, 10201-12.
 Instruction should be given in every county and encouraged in every way (*Brooke-Hunt*) 15640-3.
 More travelling lecturers required for benefit of those who cannot attend courses at a college (*Goaring*) 11063-5.
 Some county councils are doing good work by providing gardens for elder lads and young men, and the system should be extended (*Brooke-Hunt*) 15649-52.
 Suggests that at each college a small tract of land should be reserved for the growing of fruit and vegetables on a commercial scale, and the students taught business methods (*Goaring*) 11073-9, 11090-2, 11105-7.

Value of the Instruction :

- Does not approve of instruction in horticulture (*Stiby*) 12616-27, 12690-7.
 Money not always well spent (*Hall*) 1597.
 Offering of prizes often has as good an effect as the giving of instruction (*Simmons*) 8662-6.
 Results of instruction are very great (*Brooke-Hunt*) 15640-1 ; (*Carrick*) 464-71 ; (*Davies*) 8270 ; (*Roberts*) 8119a, b.
 Scientific knowledge is of great importance (*W. P. Wright*) 10153-6.
 Very valuable work has been done during the past 16 years (*W. P. Wright*) 10119-20.

Manual Processes :

- How instruction could be extended, and the importance of it being extended (*Alltoft*) 10633-9, 10729, 10745.
 Instruction must be given if the county council spends money on prizes (*Inskip*) 3419-20.
 Men are not anxious to take up work of this character (*Alltoft*) 10693-709.
 Older men seem averse to teaching the younger ones (*Acland*) 2736.
 Students, number of, passed through the hands of one instructor (*Alltoft*) 10737-9.
 Type of student and their after-careers (*Alltoft*) 10628, 10644-5, 10648-51, 10681-10684, 10691-2, 10710-3, 10719-28, 10750-10753.
 Teacher, the type of man (*Acland*) 2795-802 ; (*Alltoft*) 10729-36.
 Various subjects taught (*Alltoft*) 10612-6, 10646-10647, 10671-5, 10686-9.
 Care of farm machinery, elementary instruction in the principles of mechanics should accompany instruction in the (*Swanwick*) 7632.
 Interest taken in instruction by students (*Swanwick*) 7631-2.
 Draining, considered a "landlord's job" ; no demand for instruction from labourers (*Druce*) 3643-7.
 Little draining being carried out (*Langridge*) 10910-1.
 Under-draining going out in the South of England (*Alltoft*) 10646-7.
 Value of instruction in (*Druce*) 3783-8.
 Hedging, "live" hedges are not dearer than wire fencing (*Alltoft*) 10740-1.
 Management of sheep, number of lambs reared is not the only indication of an efficient shepherd (*Stiby*) 12708-12.
 Thatching is dying out (*Alltoft*) 10656-9, 10743-4.

Organisation and Method of Instruction :

- Absolutely necessary that there should be prizes (*Eve*) 13091-4.

Subjects of Instruction—cont.**Manual Processes—cont.****Organisation and Method of Instruction—cont.**

Excellent results have followed from small society giving prizes for good work (*Simmons*) 8631-8.

How classes are organised (*Alltoft*) 10652-5.

Length of instruction (*Alltoft*) 10609-11.

May be necessary to organise and to systematize the instruction (*Brooke-Hunt*) 15638.

Method of instruction (*Alltoft*) 10620-4, 10716-10718.

Needs a great amount of superintendence to prevent waste (*Acland*) 2720a, 2737-40.

Number in class (*Alltoft*) 10617-9.

Prizes might be given by agricultural society (*Brooke-Hunt*) 15639.

Should be taught by sending young men with the older ones to get instruction (*Eady*) 9369-9373, 9447-68.

Suggests that no instruction should be given, but the money spent in giving premiums to lads who have been instructed (*Stiby*) 12633-12638, 12649-50.

Taught by means of apprenticing boys to practical experts (*Wheeler*) 6416-9.

Whether it is necessary to provide an instructor for the purpose (*Alltoft*) 10661-3, 10676-80; (*Fisher*) 3007, 3032; (*Stiby*) 12717-20; (*Swanwick*) 7730-3; see also (*MacDonald*) 11848-50.

Value of the Instruction :

Appreciated by farmers and men (*Acland*) 2720a, 2739-40; (*Alltoft*) 10625-8.

Every county council should encourage instruction (*Eve*) 13087-94.

Good results which have followed from instruction (*Grant*) 10357.

Importance of instruction being continued (*Alltoft*) 10640-4.

Instruction is doing a great deal of good and should be encouraged (*Brooke-Hunt*) 15638-9.

Need of instruction because it is difficult at present time to get farm work done (*Chris. Middleton*) 12828-32.

Unfavourable opinion as to the instruction (*Hall*) 1597a.

Meteorology :

Attitude of agriculturists towards meteorology and meteorological forecasts (*Mill*) 6327, 6345-6346, 6382-7, 6388-95, 6398.

Cost of instruments for use by ordinary farmer (*Mill*) 6360-1, 6374-7.

Farmers should have a sufficient knowledge of, to grasp the bearings of the Weekly Weather Report (*Mill*) 6302-6, 6316, 6339, 6355-6, 6371-2, 6384, 6387, 6398.

Importance of instruction in, being given at agricultural colleges (*Mill*) 6315-8, 6322, 6339-6341.

Suggestion for increasing the instruction in, at agricultural colleges (*Mill*) 6319-21, 6323-4, 6370-3, 6378-82.

Value of meteorology (*Dunstan*) 825, 840-3.

Poultry-keeping :

Commencement of systematic instruction in (*Brown*) 6155a.

Experimental work, need for further (*Brown*) 6171f, 6222-4, 6248-52.

Great demand for men qualified in (*Brown*) 6171c. Has been, and could still be, great increase in number of poultry kept in this country (*Brown*) 6254-8.

Institutions at which instruction is given (*Brown*) 6155h.

Instruction in, abroad (*Brown*) 6165b.

Instruction should be encouraged as much as possible (*Brooke-Hunt*) 15623-5.

Lectures require to be supplemented by advanced teaching (*Brown*) 6155c.

Length of course desirable for full instruction (*Brown*) 6172-3.

Need for poultry-stations for experimental work (*Brooke-Hunt*) 15623.

No one can succeed in poultry-keeping without a knowledge of general agriculture; does not believe in poultry-farming by itself (*Brown*) 6172, 6282, 6290-1.

Very valuable results have followed from instruction in (*Brooke-Hunt*) 15623-5; (*Chris. Middleton*) 12821-3.

Subjects of Instruction—cont.**Veterinary Hygiene :**

Absolutely essential that a farmer should have a knowledge of veterinary science, especially in regard to the recognition, causes and prevention of disease (*Cave*) 9498.

Farmers greatly appreciate instruction in (*Brookholes*) 13783-4; (*Chris. Middleton*) 12824, 12833.

Instruction has been of great value (*Amos*) 890, 913-5, 931-3; (*Brooke-Hunt*) 15627-32; (*Chris. Middleton*) 12824.

One of the objects of the instruction is to do away with old-fashioned methods and "quack" remedies (*Cave*) 9559-66.

Teaching of, at an agricultural college is of great use (*Cave*) 9490.

Very good thing if every farmer could be taught the elements of what may be called veterinary physiology and hygiene (*McFadyean*) 9723a, 9724a, c, 9726-9.

Attitude of Veterinary Profession towards such Instruction :

Always avoids giving farmers information on actual treatment (with examples showing attitude taken up with regard to certain diseases) (*Cave*) 9498-500, 9518, 9527-36, 9541-4, 9549-57, 9567-73, 9571-3.

Has always felt himself limited by having regard to "professional etiquette," but has seldom found any difficulty arise with local veterinary surgeons (*Cave*) 9523-6, 9541-8.

Never found any difficulty arise (*Acland*) 2746-2748; (*Blackshaw*) 1736; (*Brooke-Hunt*) 15627; (*Burne*) 5628; (*Phipps*) 9173-5.

Not either necessary or advisable to teach farmers anything whatever with regard to treatment of animals (*McFadyean*) 9723b, 9725b.

Opposition is not now so strong (*Gilchrist*) 698-703.

Opposition was raised by inserting an advertisement in local paper offering to receive patients for the college hospital (*McClellan*) 9980, 9982; see also (*Cave*) 9537-40.

There is a little jealousy (*Amos*) 913.

SURREY.

See also under South-Eastern Agricultural College.

Bee-keeping :

Instruction given through the Surrey Bee-Keepers' Association (*Reid*) 14601-3, 14608, 14675-7.

Instruction has been most beneficial (*Reid*) 14622. Lectures and demonstrations, and personal advice (*Reid*) 14612-3, 14678.

Work with regard to "foul-brood" (*Reid*) 14607, 14610, 14656-7.

SURVEYORS' INSTITUTION.

Evidence received from (*Langridge*) 10893-11025, representing the Institution.

Examinations leading up to Fellowship of the Institution (*Langridge*) 10901-13, 10957-60, 10968-70.

Great increase in the number of candidates (*Langridge*) 10961-5.

Students from agricultural colleges are preferred to those taught privately (*Langridge*) 10966-7.

Scholarships tenable at certain agricultural institutions (*Langridge*) 10896-901, 10970-7.

SUSSEX, EAST. See under Uckfield Agricultural and Horticultural College.**SUSSEX, WEST.**

Evidence received principally from (*Drewitt*) 12014-12173.

Attitude of agriculturists and the County Council towards agricultural education (*Drewitt*) 12029, 12031-3, 12051-2, 12061-2a, 12066, 12069-70, 12072-3, 12085-90, 12100, 12105-6, 12108-12, 12124-5, 12161-5, 12173.

Classes have been held in the following subjects, but were subsequently abandoned, largely owing to lack of interest:

Dairying (*Drewitt*) 12021-4, 12028.

Farriery (*Drewitt*) 12084-90.

Horticulture (*Drewitt*) 12045-9.

and Scholarships were offered (*Drewitt*) 12067-76,

Sussex, West—cont.

Education Committee, some members of, wished to start instruction in forestry (*Drewitt*) 12029-30, 12034-9.

Farmers' sons are to a great extent not becoming farmers; and farms, as they become vacant, are taken by men from other counties (*Drewitt*) 12040-4, 12063-6.

Previous to the Education Act of 1902 the "whisky money" was spent chiefly on art classes, &c., but it is now being utilised for pupil-teachers' centres and secondary education (*Drewitt*) 12028, 12056-60, 12077-83, 12118-27.

School gardens are now provided at certain elementary schools (*Drewitt*) 12137-9.

South-Eastern Agricultural College, Wye, the question of connection with, was at one time considered (*Drewitt*) 12131-2.

Suggests that an experimental station in the county would arouse interest and create desire for further instruction (*Drewitt*) 12053-5, 12092-9, 12106, 12129-31, 12171.

See also under Uckfield College.

SUTTON, Mr. M. J. *Member of the College Council of the University College, Reading.*

Evidence, 4015-4106.

SWANLEY HORTICULTURAL COLLEGE, KENT.

Evidence received principally from (*Wilkinson*) 11556-11676.

Buildings and land attached to College (*Wilkinson*) 11632-4.

Governing Body (*Wilkinson*) 11566-71, 11655, 11667-8.

Courses of Instruction (*Wilkinson*) 11572-82, 11586-11594, 11625.

Elementary school teachers, *see that title*.

Instruction in practical horticulture is excellent, but the scientific side requires strengthening (*Dunstan*) 1915-7.

Students are well trained (*T. W. Cowan*) 14826-9.

Financial Position (*Wilkinson*) 11557-61, 11629, 11674-5.

Anxious to receive grants from Board of Agriculture (*Wilkinson*) 11643-52.

Scholarships tenable at (*Wilkinson*) 11635-8.

Staff (*Wilkinson*) 11591, 11626-31.

Inadequately paid (*Wilkinson*) 11629.

Students :

Fees (*Wilkinson*) 11595.

Number of (*Wilkinson*) 11596-7, 11662.

Residential accommodation for (*Wilkinson*) 11564-5.

Type of student and their after-careers (*Wilkinson*) 11562-3, 11577, 11592-3, 11598-611, 11613, 11619-20, 11623, 11635-7, 11658, 11660-1, 11663-6, 11669-73, 11675.

Course at the College is useful to women whether they marry or not (*Wilkinson*) 11611.

COLONIAL BRANCH.

Evidence received principally from (*Mrs. Hopkinson*) 11677-11757.

Aim of (*Mrs. Hopkinson*) 11678.

Colonial societies, &c., from whom assistance is received (*Mrs. Hopkinson*) 11719, 11750, 11753, 11756.

Governing Body (*Mrs. Hopkinson*) 11698-700.

History of the formation of (*Mrs. Hopkinson*) 11678, 11691-2, 11695.

Courses of Instruction (*Mrs. Hopkinson*) 11680, 11686-90, 11705, 11735-8, 11745, 11748-9, 11756-7.

Financial Position (*Mrs. Hopkinson*) 11691-4, 11728-34, 11741-4.

Money required to improve equipment (*Mrs. Hopkinson*) 11725-7.

Staff (*Mrs. Hopkinson*) 11756.

Swanley Horticultural College, Kent—cont.**Colonial Branch—cont.****Students :**

Fees (*Mrs. Hopkinson*) 11713-4.

Number of (*Mrs. Hopkinson*) 11683, 11702, 11735-7.

Applications vary greatly in number (*Mrs. Hopkinson*) 11750.

Residential accommodation for (*Mrs. Hopkinson*) 11682-4.

Type of student and their after-careers (*Mrs. Hopkinson*) 11696-7, 11702-4, 11706-11712, 11716-7, 11720-4, 11739-40, 11746-11747, 11754-5.

SWANWICK, Mr. BRUCE. *Member of the Agricultural Committee of the Gloucester County Council* (Qualifications of the witness, *see* 7611, 7676-7, 7686-7, 7739, 7750-1, 7768-71.)

Evidence, 7585-7771.

TINNISWOOD, Mr. ROBERT. *Alderman of the Cumberland County Council.* (For information as to own farm, *see* 7129, 7131, 7148.)

Evidence, 7112-7216.

TURNER, Mr. DRYSDALE. *Director of Agricultural Instruction to the Gloucester County Council.* (Qualifications of witness, *see* 7774-6.)

Evidence, 7772-7839, 7869-8050.

TURNOR, Mr. CHRISTOPHER. *Representative of the County Councils' Association.* (Qualifications of witness, *see* 14221-30, 14293-4, 14372-5.)

Evidence, 14221-14485.

UCKFIELD, AGRICULTURAL AND HORTICULTURAL COLLEGE AT.

Evidence received principally from (*Mannington*) 1972-2153; (*Woodhead*) 2154-2335.

Attitude of County Council towards the College (*Goaring*) 11049-51; (*Mannington*) 1990-1, 2088-9.

Board of Agriculture, relations with (*Mannington*) 2018-20, 2103-6.

Governing Body (*Mannington*) 1973-4, 2008-20.

Scope for development (*Mannington*) 2030-1, 2079-2083.

West Sussex, relations with (*Mannington*) 2003-7, 2021-4, 2136; (*Woodhead*) 2220-1.

Analysis (*Mannington*) 2125-6, 2147-9; (*Woodhead*) 2299-303.

Attitude of Agriculturists towards, *see that title*.

Courses of Instruction (*Mannington*) 1985, 2059-65, 2084-90, 2135-6; (*Woodhead*) 2154-70, 2201-7, 2229-51, 2311-3, 2328-9.

Elementary School Teachers, *see that title*.

Horticulture (*Goaring*) 11031, 11080-4, 11108-9.

Need for a short course for farmers' sons (*Woodhead*) 2168-70, 2229-36.

No outside examiners (*Woodhead*) 2258-63.

External Work :

Experiments (*Mannington*) 1981-2, 2003-5, 2209-2210.

Horticulture (*Goaring*) 11031-6, 11071, 11100-4.
Fruit stations (*Goaring*) 11043-9; (*Mannington*) 2001.

Lectures (*Mannington*) 1996-8, 2003-5, 2073-4, 2121-4, 2144-6; (*Woodhead*) 2178-80, 2183-8.

Farm (*Mannington*) 1983-4, 2026-9, 2036-7, 2135-7.

Finance :

Additional grant from the Government would materially strengthen position of the College (*Mannington*) 2034-6.

Sources of income (*Mannington*) 1991-5, 2006, 2037-44; (*Woodhead*) 2324-6, 2332-3.

Scholarships tenable at (*Mannington*) 2142-3; (*Woodhead*) 2314-22.

Staff (*Woodhead*) 2193, 2304-5.

Require an additional agricultural lecturer (*Mannington*) 1996.

Uckfield, Agricultural and Horticultural College at—cont.**Students :**

Fees (*Mannington*) 1986-7, 2141; (*Woodhead*) 2323.

Higher, charged to students from outside the county (*Mannington*) 1986-7; (*Woodhead*) 2323.

Number of (*Mannington*) 2057-8, 2071; (*Woodhead*) 2171-2, 2296-8, 2306-10.

Previous education of, *see that title*.

Type of student and their after-careers (*Goaring*) 11085-9; (*Langridge*) 10916; (*Mannington*) 1986-9, 2070-2, 2119-20, 2136-8; (*Woodhead*) 2173-6, 2194-9, 2227-8, 2273-91, 2334-5.

UNITED STATES OF AMERICA. *See under*
Colonial and Foreign Countries.

UNIVERSITIES AND UNIVERSITY COLLEGES.
See under Institutions.

VETERINARY EDUCATION.

For information as to the instruction in veterinary matters given to farmers and students at agricultural colleges, see Subjects of Instruction—Veterinary Hygiene.

Assistance given by colonial and foreign Governments to (*McFadyean*) 9703, 9712; (*T. H. Middleton*) 15464-7.

Government assistance to veterinary colleges is absolutely necessary if veterinary education—which is of the greatest importance to agriculture—is to attain in this country the level already attained in most continental States and to march on that level (*McFadyean*) 9695-706, 9744-9, 9754.

May be said to date from the latter part of the 18th century (*McFadyean*) 9674-5.

Royal Veterinary College, *see that title*.

Students can now obtain the London University Degrees of B.Sc. and D.Sc. in Veterinary Science (*McFadyean*) 9689-90.

Veterinary colleges are precisely in the same relation to the State, as regards the need for State aid, as medical schools (*Ogilvie*) 15928-30.

VETERINARY HYGIENE. *See under* Subjects of Instruction.

VICTORIA UNIVERSITY. *See* Manchester University.

VOELCKER, Mr. J. A., M.A., B.Sc., Ph.D. *Chemist of the Royal Agricultural Society of England.* (Qualifications of witness, *see* 13975-7, 13994-5.)
Evidence, 13975-14039.

WANTAGE ESTATE. *See under* Mr. C. H. Eady.

WARD, Mr. R. P. *Director of Education, Cheshire County Council.*
Evidence, 4451-4690.

WARREN, Mr. T. H., M.A. *Vice-Chancellor of the University of Oxford.*
Evidence, 5411-5471.

WEISS, Professor F. E., D.Sc. *Professor of Botany in the University of Manchester.*
Evidence, 8937-8959.

WEST INDIES. *See under* Colonial and Foreign Countries.

WESTMORLAND COUNTY COUNCIL. *See under* Newton Bigg, Cumberland and Westmorland Farm School.

WHEATLEY, Mr. ALBERT, F.R.C.V.S., of Berkshire. (Qualifications of witness, *see* 12916, 12925, 12937-12938.)
Evidence, 12909-12950.

WHEELER, Mr. E. VINCENT V. *Vice-Chairman of the Worcester County Council.*

Evidence, 6399-6479.

WILKINSON, Miss. *Principal of the Horticultural College, Swanley.*

Evidence, 11556-11676.

WILKS, Rev. W., M.A. *Secretary to the Royal Horticultural Society.*

Evidence, 13902-13974.

WILTSHIRE.

Evidence received principally from (*Fitzmaurice*) 7840-7868; (*Phipps*) 8980-9205.

Agricultural Education Committee :

History of the appointment, and the powers of (*Fitzmaurice*) 7840a, c, f, 7841-3, 7848-9; (*Phipps*) 9050-60.

For information as to the establishment in other countries of similar committees, see Organisation—County Councils.

Attitude of the County Council and ratepayers towards expenditure on agricultural education (*Fitzmaurice*) 7840b-e, 7844, 7846-7; (*Phipps*) 9059.

Dauntsey Agricultural School, *see that title*.

Good work is being done in (*Beaven*) 14167-9.

No agricultural lectures, experiments, or forestry instruction (*Phipps*) 9087-98, 9125-8.

Attitude of Agriculturists, *see that title*.

Dairying :

Cheese school (*Phipps*) 8985-99, 9146-54.

Fees charged (*Phipps*) 8993-6.

Why the school was abandoned (*Fitzmaurice*) 7844a, 7845.

Travelling dairy school (*Phipps*) 9000-17, 9111-7, 9138-45, 9155-68.

Students, type of (*Phipps*) 9010.

Elementary School Teachers, *see that title*.

Farriery and Veterinary Science (*Phipps*) 9018-27, 9169-76.

Fees charged (*Phipps*) 9022.

Finance :

Board of Education, application to, for a grant (*Phipps*) 9082-3, 9189-93.

Receive little by way of grants (*Fitzmaurice*) 7846, 7850.

Work has been curtailed owing to want of funds (*Phipps*) 9025-30, 9036, 9123-8 9183-6, 9188.

horticulture (*Phipps*) 9031-5, 9037-41, 9088-91.

Manual Processes (*Alltoft*) 10639, 10664-70; (*Phipps*) 9027-30, 9042-9, 9101-4.

Prizes given by Hunt Committee (*Alltoft*) 10757-8.

For details of the instruction in manual processes refer to Subjects of Instruction, Manual Processes, *evidence by* Mr. Alltoft.

Poultry-keeping (*Phipps*) 9036.

Scholarships awarded (*Phipps*) 9066-77, 9099-101, 9177-82.

Staff (*Phipps*) 8985-8, 9002-3, 9015-6, 9020, 9025-6, 9032, 9036, 9064, 9203.

WINTER, Professor T. *Professor of Agriculture, University College of North Wales, Bangor.* (Qualifications of witness, *see* 6651.)

Evidence, 6650-6906.

WOMEN, Instruction in Agriculture and Horticulture for.

Agricultural education is not taken seriously enough by women students and teachers (*Bradley*) 8798-9, 8801-2, 8804, 8841-2.

Co-operation, essential for (*Bradley*) 8811-6.

Women are not in favour of co-operation (*Bradley*) 8769.

Difficult for women to get into market gardens as working pupils (*Miller*) 9604-9.

Horticulture can be made to pay (*Keeble*) 4402-6; (*Miller*) 9594-8.

Importance of women being properly trained (*Crooke*) 4694a, 4770-5; (*Miller*) 9599-600.

Women, Instruction for—cont

It is necessary that agriculture or nature-study should receive a definite place in the school curriculum beginning from the elementary school (*Bradley*) 8758b-66, 8843-9.

Openings for women in agriculture and horticulture, and opinion as to their comparative value, with examples of where success has been attained (*Bradley*) 8752-8a, 8765, 8773-81, 8785-7, 8799a-8800, 8805-18, 8819-37, 8854; (*Crooke*) 4694b, 4793-6, 4801-16, 4834-8; (*Dugdale*) 4944-8, 4996-4999; (*Faithfull*) 5345-52; (*Keeble*) 4402-10; (*Miller*) 9636-42, 9663-73; (*Wilkinson*) 11612-24, 11661.

University degrees in agriculture should be open to women (*Bradley*) 8764, 8789-97.

WOOD, Mr. T. B., M.A. *Reader in Agricultural Chemistry and Secretary to the Department of Agriculture, University of Cambridge.* (Qualifications of witness, see 52-55.)

Evidence, 1-238.

WOODHEAD, Mr. S. A., B.Sc., F.I.C., F.C.S. *Principal of the Agricultural and Horticultural College, Uckfield.* (Qualifications of witness, see 2190-2, 2252-7.)

Evidence, 2154-2335.

WORCESTER.

Evidence received principally from (*Wheeler*) 6399-6479.

Attitude of agriculturists, *see that title.*

Attitude of the County Council towards agriculture (*Wheeler*) 6429-30, 6455-8.

Birmingham University, possibility of being affiliated to (*Wheeler*) 6465.

Expenditure on agricultural education (*Wheeler*) 6429-32.

Lectures and other forms of instruction (*Wheeler*) 6423-7.

Scholarships awarded (*Wheeler*) 6409.

Little demand for (*Wheeler*) 6409-10.

Steps taken to improve the class of agricultural labourers (*Wheeler*) 6416-20, 6433-5, 6472-3.

WORLESTON DAIRY INSTITUTE, CHESHIRE.

Evidence received principally from (*Ward*) 4451-4690.

Amount of cheese made and price realised (*Ward*) 4487-91, 4546, 4576-8.

Worleston Dairy Institute, Cheshire—cont.

Amount of spoilt produce (*Ward*) 4489, 4506-11, 4543-5.

History of the establishment of (*Ward*) 4452.

No research work conducted (*Ward*) 4458.

Attitude of Agriculturists towards, *see that title.*

Courses of Instruction (*Ward*) 4454, 4457, 4467, 4470-3, 4499-505, 4529-30, 4541-2, 4547-54, 4572-5, 4579-80, 4658-71.

External Classes (*Ward*) 4483-6, 4558-71.

Farm (*Ward*) 4452a, 4453-4.

Financial Position (*Ward*) 4476-82, 4593-601.

Scholarships tenable at (*Ward*) 4472, 4481-2, 4493-4, 4515-8, 4536-41, 4666.

Staff (*Ward*) 4456.

Students :

Fees (*Ward*) 4514.

Higher, charged to students from outside the county (*Ward*) 4513-4, 4525.

Number of (*Ward*) 4470.

Residential accommodation (*Ward*) 4461-2.

Type of students and their after-careers (*Ward*) 4459-60, 4463-70, 4472-5, 4494-6, 4531, 4669-90.

WORSHIPFUL COMPANY OF FARRIERS. *See* Farriers.

WRIGHT, Mr. F. H. *Registrar of the University College, Reading.*

Evidence, 3923-3928.

WRIGHT, Mr. W. P. *Horticultural Superintendent under the Kent County Council, and Horticultural Instructor at the South-Eastern Agricultural College, Wye.* (Qualifications of witness, see 10184-7.)

Evidence, 10113-10286.

YORKSHIRE COUNCIL OF AGRICULTURAL EDUCATION. *See under* Leeds University, Governing Body.

YOUNG, Mr. T. J., F.S.I. *Principal of the College of Agriculture and Horticulture, Holmes Chapel, Cheshire.*

Evidence, 1240-1446.





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